THE

Philadelphia Journal

OF THE

MEDICAL AND PHYSICAL

SCIENCES.

EDITED BY N. CHAPMAN, M. D.
PROFESSOR OF THE INSTITUTES AND PRACTICE OF PHYSIC AND CLINICAL PRACTICE, IN THE UNIVERSITY OF PENNSYLVANIA,

W. P. DEWEES, M. D.
LECTURER ON MIDWIFERY,

AND

JOHN D. GODMAN, M. D.
LECTURER ON ANATOMY AND PHYSIOLOGY.

VOLUME I.

NEW SERIES.

PHILADELPHIA:
H. C. CAREY & I. LEA——CHESNUT STREET.
William Fry, Printer.
1825.

Eastern District of Pennsylvania to wit:

Seal.

BE IT REMEMBERED, that on the first day of May, in the fifteenth year of the Independence of the United States of America, A. D. 1825, H. C. Carey & I. Lea, of the said District, have deposited in this Office the title of a Book, the right whereof they claim as proprietors, in the words following, to wit:

"The Philadelphia Journal of the Medical and Physical Sciences. Edited by N. Chapman, M. D. Professor of the Institutes and Practice of Physic, in the University of Pennsylvania, W. P. Dewees, M. D. Lecturer on Midwifery, and John D. Godman, Lecturer on Anatomy and Physiology."

In conformity to the Act of the Congress of the United States, intituled, "An Act for the encouragement of Learning, by securing the Copies of Maps, Charts, and Books, to the Authors and Proprietors of such Copies, during the times therein mentioned." And also to the Act, intituled, 'An Act supplementary to an Act, intituled, 'An Act for the encouragement of Learning, by securing the Copies of Maps, Charts, and Books, to the Authors and Proprietors of such Copies, during the times herein mentioned,' and extending the benefits thereof to the Arts of designing, engraving, and etching historical and other Prints."

D. CALDWELL,
Clerk of the Eastern District of Pennsylvania.

TO READERS AND CORRESPONDENTS.

We have received from Professor Caldwell his "*Analysis of Fever,*" of which we shall give a full account in our next number. It is an able and elaborate exposition of the subject, and cannot fail to arrest the attention of our readers.

With much satisfaction we acknowledge the reception of a work on "Chemical Equivalents," by Robert Best, Esq. one of the lecturers in the Transylvania University. We have placed it, for examination, in the hands of a gentleman equally distinguished for his profound acquaintance with chemistry, and his zeal for the promotion of science in general. Judging from what we know of Mr. Best's careful habits of study, and ardent enthusiasm in whatever he undertakes, we have no fear that his reputation will suffer by the criticism proposed.

We have received, through the kindness of our excellent friend Professor R. M. Patterson, the Report of the French Royal Academy on Mr. Auzoux's Anatomical Models.

Dr. Chapman's Essay, in continuation, on Epidemics, has been crowded out of our present number, by the stronger claims of our Correspondents.

We have received, from a highly respected source, the bills of mortality of the principal cities in the United States, for the last year, which came unfortunately too late for our present number. They will be presented at full in the ensuing number with the addition of the reports now wanting to complete the whole series.

Our distant correspondents who wish their papers to appear in the Journal without delay, are requested to forward them as early as possible, directed to "Messrs. H. C. Carey & I. Lea, for the *Philadelphia Journal.*"

225555

CONTENTS.

I. Posthumous Papers of Jason V. O'B. Lawrance, M. D. Prepared for Publication from his Manuscript Notes, by John D. Godman, M. D. . . . . .

II. Observations on the Pathology and Treatment of Cholera Infantum. By D. Francis Condie, M. D. Read before the Philadelphia Medical Society . . . 1

III. On Medical Jurisprudence. By R. E. Griffith, M. D. 36

IV. Remarks on the Disease termed Bronchocele, which prevailed in Pittsburg and its vicinity. By William H. Denny, M. D. of Pittsburg 47

V. Some Observations on the Opinions of the Ancients respecting Contagion. By G. D. Yeats, M. D. Fellow of the Royal College of Physicians, &c. 54

VI. Observations on the late Epidemic Catarrh, as it appeared in this City, during December, 1824, and January and part of February, 1825. By W. P. Dewees, M. D. 66

VII. Contributions to Pathological Anatomy, &c. By John D. Godman, M. D. 78

VIII. An Inquiry into the Medical Topography and Epidemic Fevers of the Valley of Virginia. By James W. Thomson, M. D. 96

IX. Case of injured Ulna, successfully amputated. By Robert B. Butt, M. D. of Portsmouth, Virginia . . 115

X. Case of Effusion into the Chest, in which Paracentesis was performed. By Samuel L. Jackson, M. D. one of the Physicians to the Philadelphia Almshouse Infirmary 119

XI. Case of Aneurism. Communicated by John Rhea Barton, M. D. 127

XII. Two Cases of extra-uterine Conception. Communicated by John Wishart, M. D. of Washington, Penn. 129

CONTENTS.

XIII. History and method of cure of the various species of Epilepsy, being the second part of the second volume of a Treatise on the Nervous Diseases. By John Cooke, M. D. F. R. S. F. A. S. Fellow of the Royal College of Physicians, and late Physician to the London Hospital. London. Longman, Hurst, Reese, Orme, and Brown, Pater Noster Row 138

XIV. Elements of the Etiology and Philosophy of Epidemics. By Joseph Mather Smith, M. D. Fellow of the College of Physicians and Surgeons of the University of the State of New York, of the Physico-Medical Society of New York, &c. New York. J. & J. Harper, 1824 162

Foreign Intelligence 185

American Intelligence 217

THE

Philadelphia Journal

OF THE

MEDICAL AND PHYSICAL

SCIENCES.

ART. I. *Posthumous Papers of* JASON V. O'B. LAWRANCE, M. D. *Prepared for Publication from his Manuscript Notes, by* JOHN D. GODMAN, M. D.

INTRODUCTION.

THE mind of the excellent and indefatigable LAWRANCE was glowing with designs for the improvement of his profession and the benefit of his fellow creatures, when he was cut off by sudden death in the midst of his useful labours—and the merciless grave received his mortal remains at the very period when he promised the highest excellence, and seemed nearest the fruition of his hopes. The works he had enthusiastically commenced, and vigorously prosecuted, were suspended—for ever! and the results of his assiduous and almost unexampled attention to the study of diseases, may be considered as nearly lost to the world.

The manuscripts from which we have attempted to extract some of the fruits of his industry, would have been

invaluable in his own hands, while to us, they are unfortunately almost inaccessible. They consist of miscellaneous observations, written in the hurry and under the pressure of business; short-hand notes, to serve as remembrancers of circumstances so well impressed on his own mind as to be recalled by the slightest associations; mere outlines of interesting prospects, which he could at any moment fill up, because of his vivid recollection of all the particulars. Of such brief, compressed, hasty, and incidental memoranda, their author has left about four thousand pages, and with all our perseverance, and best exertions, we can hardly hope to collect more than will make two hundred, since we have no means of knowing in what manner the chasms were to have been filled, nor what additional observations this zealous physician would have made, had he ever lived to systematize what he wrote.

We make these remarks with a view to account for the imperfections which must necessarily appear in the papers prepared from Dr. Lawrance's notes. In regard to the facts, they are exactly copied from what he has written; but as the notes containing them are multifarious, unconnected, and never intended for the use of any person except himself, we may hope for some indulgence, if we prove unable to impart to them that excellence and interest they would have possessed, had they been finished by the hands of their lamented author.

Dissections of Subjects dead of Yellow Fever, made at New Orleans, during the Years 1817, 1718, *and* 1819.

OBSERVATION I.

A white man, aged twenty-five, native of Boston, stout, ruddy, and of a full habit, came into the hospital on the third or fourth day of his disease. The day before, he had fallen into the river after his chill came on, and his clothes were still wet when he came in.

Symptoms.—Pulse frequent, but rather contracted and weak—skin of natural temperature, moist, and breaking out in sudden occasional perspiration—tongue much coat-

ed—where not coated, very red, and moist—the coating well inlaid, and of a dirty colour—complains not of pain, but weakness, and uneasiness at pit of stomach—says he has vomited bile—vomits still, but neither much nor often.

His words are delivered in too hurried a manner—his head and eyes are thrown too much back—his tongue too peculiarly coated—and his stomach too singularly affected, for this to be a slight case.

On the fifth day he became delirious. Delirium continued on the sixth day. He smiled often—said he was not sick—felt well, and sat up occasionally in bed; skin unnaturally cool every where, except on the forehead and neck, where the temperature was natural—the colour of the surface was bluish—tongue highly red, with a distinct, inlaid, whitish coat; it also felt quite cool.

Died on the sixth day, at three P. M.

Remarks.—During the time he was in the hospital, not quite four days, all his symptoms seemed to be those of the true yellow fever. He never was affected with coma, though he sometimes seemed a little drowsy. I always found him awake, except once, and even at this time he was easily roused. He never complained of pains of the head or limbs, and while in the hospital the pupils of his eyes looked natural. These circumstances are mentioned, because it might be *supposed* that he suffered some injury of the head, at the time of his fall into the river.

Dissection.—On cutting the scalp, a considerable quantity of blood was poured out, and the blood-vessels between the scalp and pericranium were a good deal distended.

The vessels of the cerebrum and cerebellum, were somewhat distended. The lateral ventricles contained se um, as did the third. The choroid plexus was highly vascular, and deep red.

Lungs natural. *Liquor pericardii* in tolerable quantity, thin, and yellowish. There was no effusion into the cavity of the thorax. The *stomach* was excessively inflamed throughout its whole internal surface, except just at the lower part, before the commencement of the *pylorus*. The inflammatory appearances were greatest at the large extre-

mity, the superior portion of which was more inflamed than the inferior. A very small speck, near its lower end, appeared to be the villous coat darkened, as it could not be removed without removing the villous coat. It was very easy to scrape off this, and then it was seen that the highly inflamed condition belonged to the internal coat, for when it was removed from any spot, the high red colour no longer existed. The other coats of the stomach exhibited many vessels, well injected with blood, which were large trunks, between whose branches the surface was not so high coloured. Externally or internally viewed, the stomach appeared inflamed.

This organ contained a considerable quantity of dark brown, fluid matter, not ropy nor mucous, as I have sometimes found it, but rather watery, leaving a coffee brown stain on a sheet, but not distinctly *grained*, nor coagulated in flakes, as the black vomit sometimes occurs in the stomach. This fluid was not of as dark a hue as the matter of *black vomit* often is.

The matter of black vomit is sometimes thick, and nearly as dark as tar; in this condition I have not perceived the distinct flakes, or coagulated portions of coffee-ground substance in it. Sometimes the black vomit consists of dark coffee-grounds, or brownish, granular particles, floating in a more fluid, brown matter. A third variety is, where it is not like coffee-grounds, but exhibiting dark, coagulated, and flaky portions, in a less dark fluid.

The villous coat could be removed from the upper part of the *duodenum*, with the same ease it could from the stomach. The *small* intestines were generally inflamed, showing the vessels from the outside, the inside being remarkably injected, especially the upper part of the duodenum, which, in many parts, had many dark spots. There was a thin, brownish, fluid matter in all the small intestines, and a small quantity of pale coloured fluid in the large intestines. There was no bile, nor bilious looking matter, in the intestines.

The upper part of the *colon* and *cœcum* was inflamed on the inside, the vessels being much injected, and in some

places the blood seems effused in very small quantities into the cellular substance of the colon.

The liver seemed as if it had been parboiled, and of a pale colour. The *pori biliarii* contained no bile; a small quantity was found in the *hepatic duct.* The *gall bladder* was small, and nearly empty; applying considerable pressure, about half an ounce of fluid was effused, of a dirty brownish colour, when seen in mass, but when spread out, and suffered to dry on a clean sheet, it gave a brownish, greenish-yellow tint. This was done to contrast it with the stain given to the same sheet by the dark brownish, coffee-coloured matter from the stomach, before mentioned, in which there was no trace of yellow nor green.

OBSERVATION II.

A Canadian in the Charity Hospital died yesterday, the history of whose case was unknown. He seemed to be a strong, full habited man, who had not been sufficiently depleted; and I was told he had been taking snakeroot and camphor.

Dissection, twelve hours after death.—The face and body were yellowish; there was much fat over the chest and abdomen, and the muscles were high coloured, thick, and tender.

In examining the *head*, some effused blood was found beneath the scalp, as if it had been bruised.

The exterior surface of the brain was vascular, and the vessels distended with dark venous blood. The lateral ventricles contained a quantity of water. There was a notable difference between the appearance of the exterior surface of the cerebrum and cerebellum, the former being much more covered by engorged blood-vessels. The cerebellum was much more tender in texture than the cerebrum, whose substance seemed natural. A good deal of blood was discharged from the sinuses of the brain, during the course of this dissection.

The cavities of the *thorax* contained several ounces of dark yellowish fluid. The right lung adhered to the pleura costalis, doubtless from some former disease.

The *lungs* were natural in texture.

The *pericardium* contained more than an ounce of a lighter yellowish fluid than that contained in the cavity of the chest.

A considerable quantity of yellowish fluid was found in the *abdomen.* The *omentum* was thick, and on the left side adhered to the peritoneum. Neither the *stomach* nor intestines appeared inflamed, when externally examined, except a small place on the lower part of the colon, where the vessels appeared red and distended. The small intestines were darkish.

The *stomach* internally was highly red and inflamed, particularly at its large end and upper part; its lower end was of a dirty lead colour. The lower part of the œsophagus, for several inches, was very red and inflamed, both on its internal and external surface. The patient, I was informed, had discharged blood by the mouth.

The *small intestines* were much inflamed, and contained dark matter, at the upper part; the large intestines were a good deal inflamed also, internally.

The *liver* was very large, and unusually hard throughout, giving an idea of its being scirrhous. It was pale, but not of so light a colour as in other late cases. The *pori biliarii* contained a small quantity of yellowish or bilious matter. The *hepatic duct* was empty, and pale; the *choledochus* equally empty, and of the same colour: both ducts were pervious.

The *gall bladder* was of rather large size, of a pale colour, resembling exactly the appearance of the intestines, when the cavity of the abdomen is first opened. It was full of a clear fluid, which escaped through the *ductus cysticus* freely on pressure. This fluid was clear as water, and somewhat mucilaginous or mucous, had no yellow nor green colour, and did not, in the slightest degree, resemble bile.

The *spleen* was large, pale blue, and tender. The *pancreas* large and vascular. *Kidneys* red, and extremely tender. Urinary bladder large, and containing much yellow urine.

OBSERVATION III.

A young man, received at the Charity Hospital, died the same day with black vomit. The history of the case was unknown.

Dissection next morning after his decease.—The body was of ordinary size, and plump. The skin was universally yellow; about the forehead and upper part of the face, it was bluish and dark, blood having evidently been effused. The side of the face and lips was stained with dark, coffee-ground vomit.

The vessels in and under the *scalp* were high coloured and much injected with blood. The *brain* looked well, and was firm, its vessels being pretty full. There was a small quantity of water in the lateral ventricles.

In the left cavity of the *thorax*, there were several ounces of bloody looking fluid, and the lungs and diaphragm on that side were nearly of the same colour. When a portion of the diaphragm was taken out, and well washed, a good deal of this colour was lost, but it still appeared very dark. The left lung was of a very dark, bloody colour, and when cut into, poured out much dark blood, as if had been in a very engorged condition. The right cavity of the chest contained about an ounce of the bloody looking fluid, and the right lung contained also dark blood, though the congestion was less than in the left. The cavity of the pericardium contained about half an ounce of yellowish fluid.

On examining the *stomach* externally, it appeared inflamed on its anterior part. It was very large, and distended with air; containing some black, coagulated stuff, mixed with a mucous substance. This mucous substance was very copious, and much resembed the villous coat of the stomach. In fact, I had not a doubt, but that some of it was the villous coat, as this coat, particularly about the middle of the stomach, was remarkably thin, and could be taken off with great ease. In some places, it was actually reduced to a slimy consistence. In some places were darker looking places intimately united, resembling the coagulated substance in black vomit. I soon had scraped off the mucous coat

from these places, and the dark matter was removed with it, as if it was the mucous coat itself, merely changed in colour. This would lead to the inference that the black vomit is nothing but a rejection of the disorganized villous coat of the stomach. The dark looking substance was found about the middle and upper part of the stomach, and also at the inferior extremity of the œsophagus. The red or inflamed colour of the stomach was confined to its middle and upper part, though the lower part showed some traces of inflammation.

The internal surface of the *œsophagus*, for several inches, was dark, and in many places red; the inner coat was also indented in several places, as if it had been removed. The dark colour was in flaky patches.

The *duodenum* was much inflamed internally; the other small intestines less so, though the red vessels shone through them in many places. The *large intestines*, throughout their whole length, were very red on the internal surface. They contained a very bloody, dark looking matter; and their inner surface partook of the colour of this substance. In some places, externally examined, they looked bluish.

The *liver* was small, and seemed almost hidden under the *right hypochondrium*, and rather of a light colour. It looked delicate, and rather flaccid, but was not unnaturally tender in texture. Its flaccidity showed it was by no means distended, and when cut into, very little blood was discharged. The *hepatic duct*, when squeezed, yielded a portion of yellowish bile. The *gall bladder* was full of fluid bile, and the *ductus cysticus* and *communis choledochus* were pervious.

In the other viscera, nothing remarkable was observed.

OBSERVATION IV.

John, a black, was taken sick soon after very cold weather; as there was much snow in the early part of January, and during part of his sickness, the weather was rather cool.

This was a most violent case of fever, characterized by

the usual symptoms of yellow fever. He had great pain in the stomach, accompanied by a burning sensation after belching. The face was distorted after each eructation, and vomiting of dark matter supervened—there was also spitting of blood, and, it was said, vomiting of the same. He suffered extremely from pain in the small of his back. About the fourth or fifth day of his illness, a suppression of urine came on, which lasted three whole days. About the ninth day of his disease, the fever appeared to cease, and he became much better; his tongue, though darkish, was moist, and his appetite improved.

This deceitful calm lasted for two days, when the fever returned with aggravation. The tongue assumed a cold and parboiled appearance—the pains of the loins increased in violence—the pulse became rebounding—hiccough ensued—and the black vomit terminated his existence on the twentieth day of the disease.

Dissection, eleven hours after death.—This subject was full and plethoric before his sickness began. When the body was opened, no fat was to be found; the cellular substance, immediately under the integuments, was tinged yellow.

On examining the *thorax*, both *lungs* were found to be in a natural condition, and rather pale coloured. The heart was adherent throughout to the pericardium, and the adhesion was so firm, that it was most probably the consequence of some former sickness. The right ventricle was very thin in its external parietes. The inside of the aorta had many small pimple-like bodies, on the inside, doubtless the result of some former inflammation.

The *stomach* was contracted, and contained some darkish mucous matter. Many parts of the internal surface were red and inflamed; while the rest of the stomach remained of the natural appearance. About an inch of the lower part of the œsophagus looked very dark, as if it had been inflamed to mortification on the inside. This internal, dark, or nearly black coat, here seemed abraded in some places.

The *intestines* gave no signs of inflammation, though in many places there were many bluish spots.

The *omentum* had no fat on it, and was of a dark colour.

The *liver* was darker coloured than usual, the *pori biliarii* being filled with bile. The *gall bladder* was small, containing but little dark, thick bile.

The *kidneys* were of a deep blue colour, as if on the verge of dissolution, though their texture was pretty firm.

The *spleen* was small, and not so dark coloured as natural. In fact, the whole abdomen looked darker than natural, and there was a considerable tinge of bile in the neighbourhood of the gall bladder.

OBSERVATION V.

A stout man, probably from the western country, died at the Charity Hospital, after black vomit. The previous history of the case unknown.

Dissection.—The *heart* and blood-vessels within the chest were very full of blood. The *lungs* were natural. The blood-vessels of the diaphragm were much engorged.

The *stomach* was highly inflamed on its inner surface, and contained a quantity of black, coagulated and flaky matter, mixed with a good deal of glairy mucous. The greatest quantity of this black matter was contained in the upper end of the stomach, and in the inferior portion of the œsophagus. All this portion of the stomach and œsophagus were highly inflamed, and even dark coloured, on the inside.

The villous coat of the stomach, and lining membrane of the œsophagus, were easy to be scraped off with the glairy mucous. This part of the villous coat, so easily scraped off, looking much like the matter of black vomit, only not quite *so deep a black.*

This dark villous coat, excited my attention peculiarly. Whatever it may be called, it is a fact that it adhered to the stomach, in some places, so strongly, as to require force for its separation, and some of it was partly detached, and hung in the glairy mucous in other places, which mu-

cous was found plentifully over all the internal surface of the stomach, and this dark coat was found adhering only to the places described.

The *liver* was paler than natural, of a good size, and firm consistence, having but little bile in the *pori biliarii.* No bile was found in the ducts. After pressing the gall bladder several times, a thick clot of bile passed through the cystic duct, which was followed by a dark coloured, pure, greenish bile.

The *small intestines* externally looked inflamed, their blood-vessels being engorged. Internally, they were inflamed considerably, particularly at the upper part, having some of the black vomit matter, similar to that in the stomach, but in smaller quantity. The *large intestines*, at the upper part, containing some pale coloured fæces, of a yellowish cast. In many places these intestines were inflamed, chiefly on their upper surface.

There were no remarkable circumstances observed in the other viscera.

OBSERVATION VI.

A patient in the Charity Hospital, apparently twenty-two or twenty-three years of age, died of yellow fever.

Dissection.—Skin universally yellow—flesh of abdomen and thorax tender, and pretty full of blood—fat in considerable quantity about the muscles, which were not so rigidly contracted, as I have seen in some yellow fever subjects.

Thorax natural.

The *stomach* contained much of the real black vomit matter, especially at its upper part, where it was floating in a less dark fluid. The same substance was found in the upper part of the small intestines, being in greatest abundance in the *duodenum.* This portion of the bowels was much inflamed in its substance generally, particularly on the inside. The stomach was not so much inflamed as the duodenum.

The *liver* was pale ash coloured, and of a natural consistence. The *pori biliarii* contained very slight traces of pale

bile. The hepatic duct contained nothing but mucous or gelatinous matter. The *gall bladder* very small and contracted, containing some dark coloured homogeneous bile. There was no bile in the *ductus communis choledochus*. Where this duct entered, the intestine appeared obstructed by contraction.

OBSERVATION VII.

A young man, perhaps twenty-five years of age, died of yellow fever, at the Charity Hospital. History of the case not given.

Dissection.—Body plethoric—skin yellow—fat in considerable quantity under the integuments.

The *heart* was very turgid with blood.

The *stomach* was inflamed internally, and the upper part of the small intestines, particularly the *duodenum*, was highly inflamed. The stomach contained a quantity of bloody fluid, and the upper part of it a small quantity of the matter of common black vomit, mixed with the bloody fluid. The fluid in the upper part of the small intestines consisted more entirely of this bloody fluid.

The *liver* was light ash coloured, rather tender in substance, and of ordinary size. *Gall bladder* contained some good looking bile, which could be easily squeezed into the *choledochus*.

The lips and face of this subject were stained with the coffee-ground substance, which must have come from the stomach. There is no evidence that the black matter vomited up at the end of this disease was furnished by the liver.

OBSERVATION VIII.

A man aged twenty-four, native of Scotland, died October 20th, 1817, after black vomit.

Dissection.—The *stomach* contained the matter of black vomit; the internal surface appearing inflamed in many places, and having numerous flakes of black vomit on it in

various parts, and at the lower end mixed with a fluid, that looked like bile.

After this patient had vomited up the black matter, he threw up a quantity of a fluid, looking like bile. On asking him how this tasted, he answered that it was bitter. This, and his purging freely, gave me hopes of his recovery.

The *small intestines* felt doughy, as if they contained something, when it was entirely owing to their state of contraction. Their internal coat was covered with slime.

The *liver* contained much blood, and the *pori biliarii* some bile. The *gall bladder* contained a moderate quantity of very dark coloured bile, but having no resemblance to the matter of black vomit.

I recollect dissecting a body of a man who died of a liver disease, in which the blood in the vena portæ looked very much like black vomit. There was in this case, and had been for a long time, complete obstruction of the gall ducts.

[To be continued.]

ART. II. *Observations on the Pathology and Treatment of Cholera Infantum.* By D. FRANCIS CONDIE, M. D. Read before the Philadelphia Medical Society.

WHEN we reflect upon the number of infants who yearly fall victims to the cholera infantum in our own, as well as in many of the neighbouring cities, and the different and even contradictory opinions which exist among physicians as to its pathology and mode of treatment, it is somewhat surprising that the disease should have occupied so little of the attention of our medical writers. The short notices of Rush, of Miller, and of Currie, though valuable in themselves, cannot be considered as complete or satisfactory: although, as observed by Dr. Miller, " notices of the cholera of infants are to be found in almost all the writers who record the annual epidemics of summer and autumn, in

sickly countries;"* yet on referring to these notices, I was surprized to find, that so far from throwing any light upon its pathology or mode of treatment, they were barely records that the disease did occur at certain periods, and produced extensive ravages. Had only a portion of that time and those talents, which have been wasted in useless inquiries into the cause of life, and the essential nature of fever, been spent in carefully investigating the pathology and method of treating cholera infantum, and other diseases, which, though of frequent occurrence, are but little understood, it would no doubt have been the means of preserving, not individuals, but thousands and tens of thousands, from a premature grave.

Although I do not flatter myself I shall be able, by the present essay, in any great degree, to supply the deficiency complained of, yet I hope, that this attempt will be the means of directing the attention of others to the subject, with talents and experience better suited for the undertaking.

SYMPTOMS.

The chief symptoms of cholera infantum are vomiting and purging, either occurring at the same time, or alternating with each other. It sometimes begins with a diarrhœa, which continues several days, without any other symptom, but most generally it comes on with violent vomiting, purging, and considerable fever. The pulse is quick and small, though sometimes it is weak and soft. The fever is of a remittent type, with evident exacerbations in the evening. The tongue is sometimes white and furred, at others dry and polished. The discharges from the stomach and bowels vary in appearance, being sometimes greenish, thin, and watery, and of an offensive smell; at others, mucous, mixed with small, whitish lumps, and streaked with green; occasionally they consist of a little, frothy fluid; and other times are large in quantity, and nearly as limpid as water; in general, after the disease is fully formed, they are desti-

* Medical Writings, p. 378.

tute of any appearance indicating the presence of bile. When the disease begins with violence, the spasmodic contractions of the intestines are quickly communicated to the abdominal muscles, and frequently to those of the limbs. The disease increasing rapidly in violence, the strength of the patient is greatly, and often suddenly, exhausted, while a coldness of the extremities, cold sweats, and faintings coming on, the life of the patient is ended in the course of a single day. In general, however, the disease is less violent. In the early stages, the patients appear to suffer much from pain; they draw up their legs, and are never easy in one position. The skin, especially of the limbs, is cold and dry, while the head is unusually warm; the features appear shrunk, the countenance pale and livid, and the eyes sunk, dull, and inanimate, while the patient generally sleeps with them half open. There is considerable thirst, which increases as the disease proceeds, and no drink is palatable but cold water, which is thrown up soon after it is swallowed. The flesh wastes daily; all kinds of aliment are loathed and refused, except, perhaps, the milk of the mother. Such is the insensibility of the system, in some instances, that flies alight on the eyes, when open, without exciting a motion in the eyelids for their removal. Occasionally the disease affects the head in such a degree, as, in some instances, to produce symptoms of delirium.

The above symptoms generally increase daily, unless relieved by judicious nursing and appropriate remedies. The evacuations become of a dark and offensive nature, and more copious and frequent; the stomach loses its powers of digestion; and every thing taken into it passes through the intestines but little altered. The thirst becomes insatiable; the mouth and tongue are covered with aphthæ; the face and feet become swollen and œdematous; the abdomen is distended with air; the skin livid, and often spotted with dark coloured blood effused beneath the cuticle, the patient lying comatose and insensible, with his eyelids half open, and turned upwards. Few recover after the appearance of the last recited symptoms, but death gradually makes its ap-

proach, often preceded by convulsions. The duration and violence of the disease are very various; some recovering in the course of a few days, while others linger for months, and though so emaciated as to resemble skeletons, at length, by proper treatment recover; while the majority die in the course of the third or fourth week; many, after lingering six or seven, and some after even a much longer period.

PATHOLOGY.

In our inquiries into the pathology of cholera infantum, the first thing that strikes our attention is the circumstances of climate and season under which it makes its appearance. It is exclusively the disease of hot climates, and with us is confined to the warmest of our summer and autumnal months, its frequency and violence being always proportionate to the heat of the season, while it invariably terminates with the appearance of cold weather. Heat, therefore, we may conclude to be one of the chief agents in its production. On a more close examination into the histories of the disease, we find, also, that it is most prevalent in large, crowded cities, particularly among the children of the poor, who inhabit the narrow and confined streets, courts, and alleys, who are badly nursed, and have but little attention paid to the cleanliness of their persons or clothing; while in the country, it is seldom met with, excepting in the neighbourhood of marshes, or in low, wet, and otherwise unhealthy situations. Hence we discover the disease to be closely allied, in its remote causes, to the other autumnal diseases of our country, appearing under the same circumstances in every respect; so much so, that in those situations, and at those seasons, most remarkable for autumnal fevers, a majority of the children fall victims to cholera infantum. The disease, therefore, I conclude to be a mere variety of the bilious fever of our climate, the force of which, if I may be allowed the expression, is turned inwards upon the intestines. This is the same opinion as that taught by Rush, and by Miller, and which is still maintained by the best writers of the present day.

The fact that cholera infantum owes its origin to an overheated and vitiated state of the atmosphere, is so generally admitted, that I have thought it unnecessary to extend this essay, by adducing evidence in its support.

In Philadelphia, the disease is most prevalent in the months of July and August. Cases, however, frequently occur in June and September, according as the hot season sets in earlier, or continues longer, than ordinary. It affects children from a few weeks after birth, until they are two years old, but most commonly between their fifth and twentieth month; and hence, their second summer, as it is termed in this city, is anticipated by parents with much anxiety; and if the child survive this period, it is considered as having passed the most dangerous stage of its infancy.

The great vascularity of the skin, its higher degree of irritability at the above period of life, the importance of its functions, at all times, to the health of the system, and the intimate connexion which exists between it and the internal viscera, so that impressions made upon the one are quickly transferred to the other, render the infant peculiarly liable to disease, from any cause disturbing or suspending the healthy functions of this portion of the system. It is likewise to be observed, that at this particular age, the intestinal canal is already in a state of increased irritability from the well known effects of dentition, and is, hence, predisposed to disease from any cause capable of disturbing the equilibrium of the circulation, and of determining an undue quantity of blood to its vessels.

By constant exposure to excessive heat, particularly when, from any cause, the surrounding air has become vitiated, or loaded with miasmatic exhalations, a debility of the cutaneous vessels is produced, by which they are rendered unequal to the circulation of their accustomed fluids; the consequence is, perspiration is diminished, and, at length, entirely suspended, while the circulating mass, driven from the surface, accumulates progressively in the central trunks; hence the skin loses its healthy appearance,

becomes pallid, dry, and harsh to the feel. The extremities, and external parts of the body, shrink and waste away, as well from the absence of their usual fluids, as from a diminution or suspension of the nutritive process. The limbs become cold, and are occasionally more or less affected with spasm; while, on the other hand, the vessels of the internal viscera, particularly of the abdomen, already in a state of debility from the operation of the remote causes, become morbidly distended by the influx of blood; the lining coats of the stomach and bowels acquire a high degree of irritability, in consequence of which, their secretions are greatly increased in quantity, while they become changed in quality; in this irritation, the surrounded organs participate, and, it being communicated to the liver, which is already in a state of engorgement, functional derangement of that organ is the result, and its ordinary secretion is either suspended or vitiated. The stomach and bowels, in consequence of their state of morbid irritability, are excited to increased and irregular action by the mass of irritating colluvies poured into their cavities from their own vessels and from the surrounding viscera.

That in this disease the discharges from the bowels are more acrid, or of a more stimulating nature, than during a state of health, cannot, I think, be doubted. In many cases, during their passage, they produce irritation, and even excoriation, of the anus and nates, but the simple fact of their being altered from their natural condition, which is indicated by their colour, consistency, and smell, is sufficient to account for their becoming a source of irritation to the irritable coats of the intestinal canal, and of course the exciting cause of the prominent symptoms of the disease.

It was at one period confidently taught, that the disease was produced merely by an overflow of bile into the stomach and bowels, in consequence of the heat of the weather stimulating the liver to an increased secretion. The bile, offending by its quantity, and inducing nature to increased exertions to throw it out of the body. This doctrine is completely refuted from the circumstance

of bile not appearing in the first stages of the disease, in the discharges from either the stomach or bowels, and that bilious discharges by stool are to be viewed as a favourable symptom. These facts, and the good effects produced by remedies directed to the hepatic system, are sufficient evidence of its derangement, and that its ordinary functions are suspended, or at least impaired.

Whether or not what has been said above, be the true theory of the mode of action of the causes which concur to produce cholera infantum, every one who has paid any attention to the nature and accession of its symptoms must acknowledge, that we have every evidence from them, of a destruction of the balance of the circulation between the surface and centre of the system, and an engorgement of the abdominal viscera, in whatever manner, or from whatever cause, we may presume this to be produced; on no other hypothesis can we account for the paleness, diminished heat, and torpor of the skin; the very rapid shrinking and wasting of the extremities; while the liquid, and almost watery, evacuations from the bowels, are continued in increasing quantities.

The dissections which have been made in this disease, though few in number, bear me out, I conceive, in the above account of its pathology. The vessels of the liver, of the stomach, and intestines, were found unduly distended with blood; traces of inflammation occasionally presented themselves on the internal coats of the latter organs; and in a case or two where the disease had continued for some length of time before death, ulceration, and even abrasion, of the lining membrane of the stomach and bowels, was discovered. We have, also, additional evidence in support of the correctness of these views, in the minute accounts which have been published of the epidemic cholera of the East Indies, which is, most probably, the same disease as the infantile cholera, differing only in the greater violence of its symptoms, and in its affecting adults, as well as children. The symptoms of this disease, as well as the appearances revealed upon dissection, evidenced an almost entire recession of the

fluids from the circumference to the centre, while the viscera, particularly the liver and stomach, were marked by the highest degree of vascular turgescence.*

Before leaving the subject of its pathology, I would remark, that there can be no doubt but that cholera infantum may be produced, after the heat of the system has given the predisposition, by eating too freely of crude vegetables, or by the use of such articles of food as are of an irritating nature, or of difficult digestion, and hence the great importance of a proper attention to the diet of children.

The presence of worms, also, in the intestines, may act occasionally as an exciting cause of the disease. But, we are to observe, that the above are but exciting causes, and will never produce cholera infantum, without the co-operation of the remote causes, heat, and a vitiated atmosphere. If this were not true, we should have the disease at all seasons of the year, and under every variety of climate and situation.

TREATMENT.

Removal to the Country.

In proceeding to a consideration of the treatment of cholera infantum, it will be proper to premise, that there is but little chance of effecting a permanent cure, so long as the patient remains exposed to the causes which have produced the disease; and hence it becomes our duty to recommend and urge his immediate removal, particularly from the confined streets of the metropolis, to a healthy situation in the country, where he may obtain all the benefits of a cooler and purer atmosphere. This of itself, where the disease has been recent, is sufficient to put a stop to the symptoms, and quickly to restore the patient to health. "It is extremely agreeable," says Dr. Rush, "to see the little sufferers revive as soon as they escape from the city air, and inspire the pure air of the country."†

* Good's Study of Medicine, art. Cœliaca, vol. i. p. 174.

† Med. Observations and Inquiries, vol. iii. p. 220.

It, however, unfortunately happens, that in many cases this change of situation cannot be effected, the circumstances of a large portion of the community being such, as necessarily to confine them, at all times, to the spot in which they happen to reside. In these cases, though the chances of success are much diminished, we must yet do the most for our patient, which the locality of his situation, and other circumstances, will admit. He should be removed to the largest and most airy room in the house, and, if possible, on the second floor. The room should be guarded from exposure to the direct rays of the meridian sun, while a constant and free ventilation is kept up.

The utmost cleanliness is, also, to be observed in the room, as well as in the person and clothing of the patient, which latter should be of such materials as will, while they do not overheat the body, guard it against the effects of sudden changes of temperature.

In clear weather, and in the cool of the day, the child should be frequently carried about in the open air, in the most healthy parts of the neighbourhood, or, where the parents have it in their power, considerable benefit will be derived from frequent rides in an open carriage into the neighbouring country. Attention to the diet of the infant, agreeably to the directions hereafter to be laid down, is another circumstance which is never to be neglected; there is, indeed, no disease to which the aphorism of Hippocrates is more applicable than to the present: "Oportet non modo se ipsum exhibere, quæ oportet facientem, sed etiam ægrum, et præsentes et externa." It is not necessary only for the physician to perform his office, but that the attendants upon the sick do theirs likewise, and that external circumstances be properly attended to.

In prescribing for a case of cholera infantum, the following appear to be the leading indications:

1st. To arrest the vomiting.

2d. To procure a more healthy secretion from the liver.

3d. To determine the blood from the overloaded viscera,

and thereby produce a more equal distribution of the circulating fluids; and,

4th. To restore tone to the stomach and intestines, and through them to the general system.

Emetics.

The majority of those writers who have treated on the cholera of infants, have recommended its cure to be commenced with an emetic. This remedy, however, I consider to be useless, if not hazardous. In those cases in which I have seen emetics administered, I have almost invariably found the convulsive and violent action of the stomach to be greatly increased, and I think, also, I have seen injurious consequences resulting from the depressing effects of the remedy alone. When it is thought to be necessary to aid nature in throwing off any offending matter from the stomach, this can be readily effected by the administration of mild diluents, such as a weak infusion of chamomile flowers, tepid water, barley water, &c. without resorting to what, to say the least of it, is in this disease a doubtful remedy. According to the plan of treatment which I have adopted, the first indication is to endeavour to calm the irritation of the stomach, for, until a stop be put to the retching and vomiting, we are precluded from administering any remedy to act on the bowels. The usual anti-emetics, with the exception of opium, may be resorted to for this purpose, such as equal proportions of milk and lime-water, in tea-spoonful doses; a cold infusion of the fresh leaves of the mentha sativa, or common spearmint; or what has been found very successful in the cholera of adults, cold toast and water, made by boiling bread in water, the bread being first so thoroughly toasted, that the decoction will have a deep brown colour. In many cases, much benefit will be derived from a poultice of the green leaves of the garden-mint, steeped in hot water, and applied over the stomach as warm as the patient can bear it: but the remedy from which I have found most advantage, and which has not in a single instance in which I have employed it, failed in speedily checking the disorder-

ed action of the stomach, is the spirits of turpentine, in doses of from ten to thirty drops, according to the age of the patient, and repeated three or four times in the course of the day; the good effects of this remedy are not confined merely to its action on the stomach, but are extended to the intestines, correcting their vitiated secretions, checking their tendency to a repetition of griping and irritating stools, and producing throughout a tendency to a more healthy action; its use should not, therefore be discontinued when the vomiting is checked, but it may be administered with advantage, at intervals, during the continuance of the disease.* When the above remedies fail in suspending the vomiting, a blister or sinapism to the stomach will most generally be found effectual; under certain circumstances of the disease, the application of blisters should never be overlooked: these however we shall notice hereafter.

Opium, Astringents, &c.

As soon as the stomach has been quieted, or even before, the employment of laudanum, either alone, or in combination with the cretaceous julep and astringents, is recommended by many practitioners, particularly by Dr. Rush. By such injudicious practice, I am well persuaded much of the mortality of the disease has been produced. It has always been too much the practice of physicians, in diseases consisting in increased discharges from the bowels, to have recourse at once to astringents and opiates; at one period, this was even the practice in dysentery, but it would do well for us to consider, whether, while we thus remove some of the prominent symptoms of the disease, we are not locking up in the system an enemy, whose presence is not the less fatal, because unsuspected. That in certain stages, and under particular circumstances of the disease, opiates, in proper doses, are indicated, I am well aware; but, when

* From the late publications, it appears that the employment of spirits of turpentine in derangements of the intestinal canal, in infants and young children, is becoming a common practice with the physicians of Great Britain, who speak of its beneficial effects in the highest terms.

given in full doses, or at the commencement, they afford but a short lived, delusive repose, to the disordered actions of the bowels. Apart, also, from their injurious effects in improperly suspending the discharges from the intestines, I should object to their employment, previously to the use of evacuants, from another and equally powerful reason: in the acute stages of cholera infantum, there is a considerable tendency to cerebral disease, the irritation being sooner or later communicated to the brain from the intestines, so as, in some instances, to produce symptoms of delirium, in others, stupor, &c. Indeed, it is no uncommon occurrence for cholera infantum, when neglected or improperly treated, to terminate in hydrocephalus internus; whatever, therefore, has a tendency to increase this determination to the brain, cannot fail to do harm: opium and its preparations are well known to possess this property in a very great degree, and hence, on this account alone, they are dangerous remedies.

Calomel.

Instead, therefore, of administering opiates, or attempting to put a stop to the discharges from the bowels by the use of astringents, I am fully persuaded, with a late very judicious writer on the epidemics of our country, that "the safety of the patient depends on a continued evacuation from the bowels of dark coloured matter, the discharge of which is indispensable in every form of autumnal disease." To produce which, "the same remedies are demanded" in the cholera infantum, "but, as the bowels are in an irritable state, the more active cathartics are in general required."* Hence, as soon as I have calmed the stomach, by the remedies already recited, I administer calomel, either by itself, or in combination with magnesia or rhubarb, the use of which is to be persevered in, until natural discharges from the bowels are procured.

To this disease, calomel is peculiarly well adapted—from

* Cooke on Epidemic Fevers, Medical Recorder, vol. vii. p. 449.

the smallness of the dose requisite to produce its effects—from its being without taste, and not apt to excite nausea, it will remain on the stomach, when almost every other cathartic would be rejected—and, from the specific and powerful action it exerts on the liver, unloading its vessels, and stimulating it to a more healthy action, while it corrects the diseased action of the intestines, it strikes at once at the very root of the disease, and exerts a sanative influence over the system, not to be obtained to the same extent, nor with the same certainty, from any other remedy. To the late Dr. Edward Miller, of New York, we are indebted for the introduction of this remedy in the treatment of cholera infantum. He observes, in his "Remarks on the Bilious Diarrhœa of Infants," that as long as the state of the stomach and intestines "is found to require evacuation, the most safe and unequivocal means, it is conceived, may be found in the use of calomel, accommodated in its dose to the age of the patient, and to other circumstances. As long as mere evacuation can be requisite or admissible, this medicine, uncombined, will prove efficacious, gentle, and safe."*

"The common mode of treatment appears comparatively superficial and palliative; and, of consequence, the effects of it are transient; while calomel, penetrating to the inmost recesses of the disease, and disarming it of all malignity, effectuates a cure, at once radical, durable, and complete."†

Dr. Miller administered the calomel in doses of from one-eighth of a grain to a grain every second, fourth, or sixth hour. In many cases, I have found a much larger dose requisite, while in others it will be proper to diminish it considerably. The size of the dose, as well as the period of its repetition, can be decided only by the age of the patient, and the circumstances of each case. There is, I am aware, with many practitioners, though I am happy to say the prejudice is fast wearing away, a great antipathy to the employment of any purgative, but particularly calomel,

* Medical Works, p. 381. † Ibid. p. 387.

in cholera infantum; thus one writer declares, "I could never reconcile it to my conscience to make trial of a remedy in a disease in which an increase of debility is the circumstance most to be guarded against, the primary and direct effect of which remedy, is to increase the evacuations, already too copious, and to reduce the strength of the patient, already too much exhausted."*

Experience, however, has fully shown, that all such fears are entirely groundless, and that while opium, spiced brandy, and the whole list of astringents and stimulants that have been recommended, increase the very symptoms which are supposed to call so loudly for their employment, calomel, in doses suited to the age of the patient, and the violence of the disease, will be found to be the remedy best adapted to rouse the system from its state of torpor; and hence is by far the best stimulant we can employ in this disease.

Even Dr. Chapman, in his lectures, has given it as his opinion, that we have purged too much in the cholera infantum. He has not, however, laid down any rule by which to graduate the extent to which purging should be carried. Judging from my own experience, and from what I have seen of the practice of others, I should come to a very different conclusion: I believe we have purged too little. In the exhibition of any remedy in disease we should have some determinate end constantly in view; and, until this be attained, provided the remedy we employ be calculated to attain it, we should persevere in its use. In the disease before us, the object for which we administer calomel is to procure bilious evacuations; and, until these be procured, we may be satisfied that we have not continued the remedy sufficiently long. As soon as we have produced a copious bilious stool, all the symptoms of the case are ameliorated; our little patient we will find enlivened—his skin becoming moist, and of a more uniform temperature—and the frequency of the irritating discharges from the bowels will be

* Currie on Cholera Infantum.

diminished. To render permanent these favourable symptoms, the remedy must, however, be still continued; but as soon as a change has been produced in the appearance of the discharges, the dose of the calomel may be diminished, or given at longer intervals.

After a free evacuation from the bowels has been procured by the use of calomel, a recent writer has recommended, in very high terms, the use of the powdered root of the asclepias tuberosa, in doses of from six to eight grains, in combination with some aromatic; or a decoction made from two drachms of the root, to a pint of new milk, boiled down to twelve ounces, and administered in doses of one ounce two or three times in the course of the day. This decoction, besides acting as a gentle cathartic, produces a determination to the skin. The employment of this remedy in cholera infantum, he states to be a common practice among the southern physicians; and he himself can bear ample testimony to its efficacy.*

Ipecacuanha.

With the calomel, I have been invariably in the habit of combining a portion of ipecacuanha, say from half a grain to a grain to each dose. The good effects of this remedy in all bowel complaints have long been celebrated, and are now very generally acknowledged. In dysentery, it has been esteemed almost a specific, and in cholera infantum, in combination with calomel, it increases very sensibly the good effects of the latter, determining to the surface, and thus assisting to unload the vessels of the abdominal viscera, while it tends to abate the griping pains, quiet irregular action, and promote free regular stools.

As soon as we have succeeded in procuring sufficient natural discharges from the bowels, or when symptoms of actual debility admonish us to support the strength of our patient, the addition of opium in minute doses, to the above prescription, will be proper; or we may discontinue entirely

* Dr. Burgon, Medical Recorder, vol. iii. p. 331.

the use of the calomel, and administer the oleaginous mixture, with the addition of tincture of opium.

Throughout the whole course of the disease, the indications for the continuance or suspension of the calomel, or for the employment of opiates and astringents, must, in a great measure, be taken from the appearance of the stools. Whenever these are unnatural, small in quantity, or indicate that the biliary secretion is impeded or vitiated, the calomel and ipecacuanha, by themselves, or combined with opium, are not to be laid aside.

When the circumstances of the case are supposed to indicate the addition of opium to the calomel, the relative proportions of the two articles can only be decided by the age, constitution, and habit of the patient, the stage and degree of violence of the complaint, as well as the concourse and succession of the symptoms: and they must be continually varied, in order to meet these ever varying circumstances, and according, also, to the greater or less degree of evacuation desired.

Magnesia.

When, from the green and frothy appearance of the stools, and the acid eructations or evacuations by vomiting, we have reason to suspect the existence of an acid in the stomach or intestines, to the calomel and ipecacuanha should be combined a portion of calcined magnesia. Though this acid is not the primary cause of the griping and purging, yet its presence has the effect of increasing and continuing these symptoms, and requires the administration of such remedies as will have the effect of removing or neutralizing it: this will in general be obtained by the use of the magnesia. Dr. Kuhn, formerly Professor of the Practice in the University of Pennsylvania, recommends, in very high terms, a small portion of a solution of pure ammonia in combination with the magnesia. Of this prescription, I have never made trial; but have been accustomed to prescribe, during the continuance of the symptoms mentioned above, and with the best effect, a weak solution

of the sub-carbonate of soda, with the addition of mint water; as—

℞.	Sub-carbonat sodæ,	ʒ ij.—iij.
	Gum. Arab.	ʒ ij.
	Aq. menthæ,	℥ ss.
	Aq. puræ,	℔ i. M.

Of which the patient is to take a spoonful every two or three hours.

The prescription made use of by Dr. Kuhn, was, I am informed, the following:

℞.	Magnesia calcinat.	℈ iv.
	Pulv. Gum. Arab.	℈ ij.
	Sacch. Alb. pur.	ʒ ij.
	Aq. Mentha pip.	℥ ss.
	Aq. puræ,	℥ ij. ss.

M. Add. aq. ammonia puræ, gtt. xlviij. ad clxiv. according to the age of the patient. Of this mixture, the dose is a tea-spoonful every two hours.

Injections.

With respect to the effects to be derived from oily and mucilaginous injections, so generally recommended in the treatment of cholera, I can say but little, having but seldom employed them. I am well persuaded, however, that in the early stages of the disease they can produce but a palliative and transient effect, not sufficient to compensate for the difficulty and trouble attendant upon their proper administration in infants. In a later stage of the disease, however, after the discharges have assumed more of a natural appearance, with the addition of a proper quantity of laudanum, they have a good effect, and may be frequently repeated.

Bleeding.

Occasionally we find the abdomen to be swollen, tense, and, from the cries and motions of the child, evidently painful to the touch, while the pulse is small and contracted. Under these circumstances, the safety of the patient de-

mands evacuation of blood, either by the lancet, or locally, by the application of leeches, and if from the fear of inducing debility, or any other circumstance, it be neglected, there is little hopes of his recovery. With the above symptoms present, it is in vain to depend upon the effects of any remedy, until bleeding has been premised, for inflammation and its consequences will have ensued, long before we can hope to make any impression on the affected viscera, even by the use of calomel. By those who look upon the cholera to be a disease attended with such a degree of debility as to preclude the employment of purgatives, the use of the lancet will no doubt be viewed with horror; such kind of fear, however, should have very little effect on our practice, when we recollect, that at one period, for the very same reason, the dread of debility, the lancet was proscribed entirely, or else employed with a trembling hand, in the treatment of almost every variety of abdominal inflammation, in dysentery, peritoneal inflammation, the puerperal fever, &c.

Dr. Rush has observed, that subsequent to the year 1793, the cholera infantum had assumed symptoms of such malignity, as to require for its cure, repeated bleedings.* The beneficial effects of this remedy were strikingly evinced in the epidemic cholera of the East Indies, which, as we have before remarked, is only a higher and more aggravated grade of the disease of which we are now treating. According to a return of one hundred cases, made by Dr. Burrell, we find that of eighty-eight that were bled, but two died, while of twelve cases in which the lancet was not employed, eight terminated fatally.†

I would not be understood, however, as recommending bleeding indiscriminately in every case of cholera infantum, but in those, and in those only, where the swelling, tension, and tenderness of the abdomen, and the state of the pulse, indicate that inflammation either exists, or is about to commence. With respect to the quantity of blood to be

* Medical Inquiries and Observations, vol. ii. p. 221.

† Medical Reports of the British Army in India.

drawn, as well as the propriety of repeating the operation, no positive rules can be laid down; these circumstances are to be decided by the symptoms of each individual case. In some cases, Dr. Rush informs us, he found two, or even three bleedings, to be requisite.*

Warm Bath, Fomentations, Blisters.

After bleeding, the warm bath, and warm fomentations to the abdomen, will be proper; and if the symptoms be not removed by these remedies, a blister should be immediately applied over the stomach.

Throughout every stage of the disease, the warm bath, when properly managed, and followed by stimulating frictions to the body, is a valuable auxiliary to the other remedies, softening the skin, determining the blood from the overloaded viscera to the surface, and equalizing the excitement. When, from any circumstance, the warm bath cannot be employed, warm fomentations to the abdomen may be substituted. The addition of spirits to the bath and to the fomentations has been said to increase greatly their efficacy. Dr. Rush has even recommended the bath to be made entirely of warm wine.†

Cold Bath, &c.

By Dr. Miller, and a few other practitioners, the cold bath, or sponging the body with cold water, has been proposed in the treatment of this disease, though they do not appear to speak of the effects of either remedy from their own experience. I can see nothing in the nature and symptoms of the disease to indicate the employment of either, and from the immediate effects of the remedy on the system, I should apprehend injury rather than benefit from its use.

In those cases of the disease where a determination of blood to the brain is indicated by the undue temperature of the head, the turgescence and redness of the face, and red-

* Medical Inquiries and Observations, vol. ii. p. 221. † Ibid. p. 219.

ness of the eyes, delirium, or stupor, &c. local blood-letting, by leeches applied to the temple or nape of the neck, will be proper. Under these circumstances, Dr. Miller has recommended the application of cold water. A blister over the stomach, and mustard poultices to the extremities, will be found of advantage.

Charcoal.

In a later stage of the disease, when it has become in some degree chronic, and the discharges from the bowels are acrid, dark coloured and offensive, upon the recommendation of Dr. Robert Jackson, I have been induced to make trial of charcoal, and with the most decidedly good effects. Dr. Jackson prescribes the charcoal in combination with rhubarb and ipecacuanha. Of this combination, he observes, that not only in dysentery, but in every case of diseased secretions from the intestinal canal, whether in children or in adults, he looks upon it not less a specific than is the bark in the cure of regular intermittents.* The prescription I have in general employed is as follows:

R.	Pulv. Carbonat. Ligni,	grs. v. ad x.
	Pulv. Radic. Rhei,	grs. v.
	Pulv. Radic. Ipecac.	gr. j.
	Mucilag. Gum. Arab.	9. s. M.

The above is to be repeated every three hours, or the charcoal may be advantageously combined with the oleaginous mixture.

Under the employment of this remedy, the stools soon become more natural in appearance, and diminished in frequency, while the appetite for food, and the digestive powers of the stomach, are sensibly increased. The charcoal is, I am well persuaded, a remedy which is deserving a more extensive trial in the diseases of the bowels, than it has yet met with among the practitioners of this city. It will no doubt soon become a valuable auxiliary in our lists of the materia medica.

* Sketch of Febrile Diseases, 2d edition, p. 47.

When cholera infantum has continued for any length of time, the little patient is very liable to be much distressed from wind distending the stomach and bowels; under these circumstances I have found a portion of genuine anniseed cordial, diluted with water, to be a very useful remedy. The spirits of turpentine will, in general, however, give speedy relief, and appears, from its action on the stomach, to prevent, in some degree, any subsequent accumulation. In those cases where the flatulency is very considerable, the vitriolic ether has been recommended, in doses of a few drops in any simple herb tea, or even pure water; where the above remedies fail in discharging the wind, small doses of volatile alkali, in simple cinnamon water, will, in general, succeed in giving the desired relief.

As soon as the prominent symptoms of the disease have been subdued, and natural discharges from the bowels established, our next duty is to restore tone to the stomach and intestines. The prescription I have found best adapted to this end, has been the cretaceous mixture, with the addition of tinc. kino.; or we may employ infusions or decoctions of colomba, or dewberry root, logwood, the catechu, &c. Indeed, any of the list of vegetable astringents and tonics will answer our purpose. According to the late Professor Barton, the root of the geranium maculatum, boiled in milk, has been found an excellent remedy in this stage of the cholera infantum: in its use, we need not be very particular about the dose.*

Diet.

Throughout every stage of the cholera infantum, the proper regulation of the diet is a subject of no inconsiderable importance. The milk of the mother, or nurse, where the child has not yet been weaned, is certainly by far the most proper article of food; but where this has been the case, the patient should be confined principally to a thin decoction of arrowroot, sago, or tapioca, in milk, and sweeten-

* Collections, &c. towards a Materia Medica of the United States, p. 7.

ed with loaf sugar, or a decoction made in the same manner from ground rice. Fresh whey, sweetened with loaf sugar, will also be found to be a very excellent article. I have known it to be readily taken by the child, when the above articles were rejected, or disagreed with the stomach. When the milk of the cow is used, it should be perfectly fresh, and is to be boiled before it is used. It has been remarked by Dr. Rush, that "after the disease has continued for some time, we often see an appetite suddenly awakened for articles of diet of a stimulating nature. He has seen many children recover, from being gratified in an inclination to eat salted fish, and the different kinds of salted meat. In some instances, they evince an appetite for butter, and the richest gravies of roasted meat, and eat them with obvious relief to all their symptoms."*

To the correctness of the above remarks, I can bear testimony, having in my own practice, frequently met with instances of this desire for the coarsest and most stimulating articles of food, and have always hailed it as a favourable symptom.

Prevention.

The means proper to guard against an attack of cholera infantum, may be summed up under the heads of attention to diet and clothing, and removal from the sources of the disease.

The breast milk of the mother is the proper and only natural food of the infant; "nature does not afford, nor can art contrive, any effectual substitute for that fluid." To it, therefore, the child should be almost entirely confined, if circumstances will allow of it, until the process of dentition has made some progress. It is impossible to lay down any rule which will be alike applicable to every case; as a general practice, however, the child should not be taken from the breast, until it be at least one year old. After weaning, its diet should consist of articles nutritive, easy of digestion,

* Inquiry into the cause, &c. of cholera infantum, Works, vol. ii. p. 219.

and but little stimulating: all spices or seasoning, with the exception of salt, all sorts of pastry, butter in every form, unripe fruits, and fermented liquors, must be carefully avoided.

The article of clothing, in our climate particularly, is a matter of much importance. It should be loose, and of a light and soft texture, and carefully accommodated to the state and changes of the weather, so as to preserve the body of an even and moderate temperature. Cleanliness of the clothing, as well as of the skin, is always indispensable to the health and comfort of the child, and should, therefore, be sedulously attended to.

Impure and heated air having been laid down as the chief causes of the cholera, it will hardly be necessary to say any thing of the importance of a removal of children to a healthy situation in the country, before the extreme heat of the summer commences. It is the best preservative against the disease; and even after it has occurred, a removal from the city, as was observed in the commencement of this essay, is one of the most powerful auxiliaries in restoring the patient to health. It is remarked by Dr. Rush, that he has "never known but one instance of a child being affected with this disease, who had been carried into the country in order to avoid it."*

As soon, also, as dentition has commenced, its progress should be attentively watched, and when the gums become swollen and inflamed, if the teeth do not speedily make their appearance, an incision should be made down to them through the gum: this is particularly necessary when teething occurs during the summer months.

* Works, vol. ii. p. 221.

Art. III. *On Medical Jurisprudence.*

By R. E. Griffith, M. D.

" Hoc opus, hoc studium parvi properemus et ampli
Si patriæ volumus, si nobis vivere cari."

Hor. Ep. 3.

To acquire the requisite knowledge and acquaintance with the laws of right and justice, according to the various and widely dissimilar constitutions and particular usages of different states or tribunals, requires the most assiduous attention and profound research. It necessarily engrosses the whole time and talents of those who apply themselves to it as a profession; and that so entirely and exclusively as to forbid the prosecution of other studies; it is almost impossible for a member of the legal profession to devote time sufficient to acquire more than a general knowledge of the healing art; he may, it is true, become acquainted with many of its theories and facts; but when particular or unusual occurrences call for that elucidation which professional study and the details of experience alone can afford, he is obliged to look to the physician for assistance in developing their nature and explaining their concomitant circumstances. That this is the fact, is daily manifested by the universal practice of requiring members of the medical profession to assist in all legal investigations, where the question at issue relates to the physical economy of man.

These remarks apply with equal force to the attainments of a physician in jurisprudence; in this, his knowledge can be but slender and superficial, should he, as is his imperative duty, devote his whole time and talents to the profession under whose banners he has enrolled himself.

There is, however, a branch of knowledge, intimately allied with both professions, serving as a link to unite them, an acquaintance with which, if not absolutely requisite both to the physician and jurist, may be of the greatest importance to both, in the course of their several labours and investiga-

tions. This science, which has received the various appellations of state medicine, legal medicine, and medical jurisprudence, is not so much concerned in the cure and alleviation of disease, as in the detection of error, the vindication of accused innocence, and the conviction of guilt.

It is extremely difficult to define exactly what are the precise bounds of medical jurisprudence. By some, it is considered as embracing only those cases of a criminal or civil nature, implicating the physical economy of man, which may become the question of judicial inquiry; by others, its dominion is more widely extended, and the consideration of every circumstance that may have a bearing or influence on public health or comfort is included under it.

Medical jurisprudence may be defined, "a science by which medicine and its collateral branches are made subservient to the construction, elucidation, and administration of the laws, and the preservation of the public health."

From this definition, we may perceive that this science embraces the consideration of topics of the most vital importance to the well being of society, and to the health and security of individuals. To use the emphatic language of the eloquent Gilbert, "the benefits conferred by legal medicine are innumerable; there is not an action, a movement, of man in society, of which it does not take cognizance; it pervades all nature, and at all times; it is the first most sacred of human laws, for it has for its sole object the good of society, and the happiness and security of mankind."

The science of medical jurisprudence has been divided by most writers into two great sections, forensic medicine, comprehending the evidence and opinions necessary to be delivered in courts of justice, and into medical police, embracing the consideration of the policy and efficiency of legal enactments, for the purpose of preserving the general health and physical welfare of the community.

Under no circumstances does the science of medicine assume so imposing and dignified an attitude, as when regarded as a branch of legislation. Disentangled from the web with which worldly caprice, credulity, and empiricism

are ever seeking to embarrass the more ordinary path of her labours, she at once bursts forth, in all the pride and strength of undeniable facts and endless resources, and her disciples are enabled proudly to present additional claims upon the respect of the learned, the confidence of the oppressed, and the gratitude of the public. In the exercise of his art as a medical jurist, how exalted and honourable is the occupation of the physician. There is scarcely a circle of natural science, upon the boundaries of which he does not impinge, in some point of his extensive orbit, and on which he does not shed additional rays of knowledge and of light. It is when thus called on, he developes the vast resources and hidden stores, which have for ages been accumulating in the sanctuary of his tutelary divinity, and following his precepts and his example, offers them as a safeguard to innocence, and a shield to the oppressed.

The institutions of medicine and jurisprudence necessarily arose as consequences of the physical and moral infirmities of our nature, and must therefore have been nearly coeval with the origin of society. In the earlier periods of the world, the connexion between these sciences could only have been slight, and perhaps scarcely perceptible; although there is reason to believe that medical jurisprudence had an origin far more ancient, and an influence far more extensive than modern writers have been willing to allow. This opinion is supported by a host of authorities, as well sacred as profane, and by the history of civilized as well as barbarous communities. But notwithstanding its early origin, we are ready to admit that its applications were extremely desultory, and often, from the infant state of the sciences upon which it rested, not only imperfect, but erroneous: indeed, the question may be very fairly asked, whether, on many occasions, the evidence of the physician has not embarrassed, where it should have enlightened, and misled, where it was called upon to direct, the steps of justice? Forensic medicine, however, can scarcely be considered as constituting a branch of legislation, until its utility is publicly recognised, and its assistance legally required.

It may be demanded, and with great justice, how it has happened, that in the United States, distinguished as they are for an unceasing jealousy and circumspection in regard to every thing that even remotely interests the life and comfort of their citizens, a science so peculiarly calculated to control the disorders of the social system, to rescue innocence from infamy and death, and to lead to the detection and punishment of crime, should be so imperfectly appreciated, and indeed almost utterly neglected.

This may satisfactorily be accounted for, and readily explained. The progress of medical knowledge, including its collateral branches of science, can only, within a few years, be said to have rendered its applications available to the laws, whilst the very spirit and feeling of our countrymen not only resist the perpetual intrusion of authorities, but insure, without the aid of legal enactments, all the benefits which can accrue from domestic cleanliness and attention. Nor is it a matter of wonder or surprise, that the extreme circumspection and jealousy of our courts of judicature should have neglected or overlooked testimony, which admits of being depreciated, or in any degree rendered questionable, by the doubtful and acrimonious controversies in medical science. But so rapid has been the progress of the leading and important branches of medical knowledge during the last few years, and so successfully have they liberated themselves from the heavy fetters with which they were bound, that the general prejudice against their practical utility in advancing the administration of justice, must gradually subside, and the study of medical jurisprudence become universally popular.

Some writers have objected altogether to the science, alleging, that it is an unnecessary addition to the already too numerous pursuits of the medical man. To their doctrine I cannot assent, although so high an authority as that of Sir William Blackstone is adduced in its support. This learned commentator observes, "for the gentlemen of the

faculty of physic, I must frankly own, that I see no special reason why they, in particular, should apply themselves to the study of the law, unless in common with other gentlemen, and to complete the character of general and extensive knowledge: a character which their profession beyond others has remarkably deserved. They will give me leave to suggest, and that not ludicrously, that it might frequently be of use to families, upon sudden emergencies, if the physician were acquainted with the doctrine of last wills and testaments, at least so far as relates to the formal part of their execution."

But from its very nature it will be evident, that a knowledge of the facts furnished by this science, must be absolutely necessary to the medical man, who is always liable to be unexpectedly called on to illustrate and explain many points connected with his own profession before a court of justice. On his answer and his explanation, the fortunes, liberty, nay, oftentimes the life, of a fellow citizen, may depend, when the many points on which medicine and its branches are auxiliary to legislation or government are duly considered, I feel convinced that it will readily be granted, that legal studies are not useless to medical practitioners in their public capacity.

In considering the use of legal knowledge, as applicable to private practice, Sir William Blackstone has mentioned one of many instances, and this, one of the most unimportant; there are a multitude of others, in which his knowledge of the laws, furnished by legal medicine, are of infinitely more consequence. In cases of lunacy, of idiotcy, and sterility, the confidential medical attendant is generally the first person consulted on the subject; in such cases, how much has he in his power? how often may he refute groundless accusation, remove causeless fear, and prevent public exposure, by forming and demonstrating correct views of the subject? how often may he aid the oppressed, defeat the guilty, and protect the innocent, by a knowledge of the legal remedies against fraud and coercion?

In many criminal cases, also, the surgeon is of necessity among the first witnesses of the deed, is it not important that he should know what evidence will be required to prove its perpetration? Surrounded by ignorant and prejudiced persons, his calm and accurate view, not only of medical but general points, becomes of peculiar importance; yet if he be unacquainted with the forms of judicial inquiry, unversed in the history of criminal courts, he will be as little able to direct his attention to the proper objects, or to divest his mind of undue bias, as the most ignorant of the by-standers.

In this country, the physician is called on in the capacity of witness, and is examined not only as to his knowledge of a particular event, but also as to his opinion on facts submitted to him; and on this opinion, whether proper or erroneous, much depends; for in questions of science, and particularly in medical science, the opinion of a man of knowledge and eminence will necessarily carry great weight with it. Dr. Percival, in his excellent treatise on Medical Ethics, remarks, "it is a complaint made by coroners, magistrates, and judges, that medical men are often reluctant in the performance of the duties required of them, as citizens qualified by professional knowledge to aid the administration of justice. These offices, it must be confessed, are generally painful, always inconvenient, and occasion an interruption to business, of a nature not easily to be appreciated or compensated; but as they admit of no substitution, they are to be regarded as appropriate debts to the community, which neither equity nor patriotism will allow to be cancelled."

Many causes may be assigned for this disinclination in the medical profession to appear in a court of justice as witnesses in a case. The consideration that the life and fortune of an individual depend on what may be alleged, not as fact, but as our opinion on a question, is appalling, and the consciousness of the great responsibility we are thus subjected to, is sufficient to create a strong reluctance in any man, possessing feelings of humanity and compassion;

yet whatever may be our sentiments with regard to the office, it is one we are called on conscientiously to discharge; we should therefore be fully prepared to elucidate and explain every fact and occurrence having any bearing on our profession. This can only be accomplished by an intimate and thorough acquaintance with the data furnished by legal medicine.

It may be asserted, and with some degree of plausibility, that a physician who is thoroughly versed in the principles of his profession, is perfectly competent to appear in this responsible situation. This opinion is highly erroneous and fraught with evil consequences; for it must be recollected, that there are many facts of the most vital importance, whose practical applications are solely confined to the purposes of jurisprudence, and are therefore entirely overlooked in the usual routine of medical study; yet these very facts, it is his duty, when called on, to explain and elucidate.

From a want of this necessary knowledge the evidence of medical men has always been a subject of general animadversion and censure with lawyers; and it is humiliating to the high and dignified standing of the medical profession to confess, that it is impossible to deny the truth of their allegations. A reference to the records of justice of every country will unfortunately afford but too many proofs, that the greatest inconsistencies, and extraordinary discrepancies, have at times pervaded the evidence of medical witnesses.

A physician should also bear in mind, that when thus called into a court of justice, that his own reputation is before the bar of the public, and that nothing but the most perfect acquaintance with the merits of the point at issue, and the conclusions to be deduced from it, can afford him that cool reflection, and dispassionate exercise of judgment, so much required, to answer properly, the minute and oftentimes perplexing examination he is subjected to. The acuteness and ready comprehension of the eminent members of the legal profession are universally acknowledged; the versati-

lity of their genius, and their rapid discernment, are rendered almost inconceivable by the constant exercise of their minds in detecting the truth or falsity of testimony; whilst it is their duty and interest to make every possible exertion for the interest of their client, they will never permit an inaccurate or contradictory statement to pass unnoticed. A medical man must therefore be fully prepared, and extremely clear and exact in his testimony, when it is thus *their* office to magnify uncertainties, and expose errors, until perhaps his evidence shall appear not only contradictory, but absurd. He is exposed, on all such occasions, to a rigid and severe criticism, that will infallibly detect his deficiencies, and lay bare his ignorance.

This unavoidable and public duty of the medical practitioner should be clearly defined, and conscientiously felt, by all the members of the profession; his statement or opinion should always be delivered in a clear, plain, and perspicuous manner, and freed as much as possible from the technicalities of medical language. A physician under such circumstances should bear in mind, that he is explaining to persons who are supposed to know little or nothing of medical science; and above all, he should be solemnly impressed with the consciousness that he is speaking upon oath; and also that on the clearness and fidelity of his deposition, the life of a fellow creature may depend.

Haslam justly remarks, that the physician should not appear in court merely to give his opinion, but he should also be prepared to explain that opinion, and able to afford the reasons which influenced his decision; for without such elucidation opinion becomes a mere dictum, and endeavours to claim precedence without courtesy or obligation to science.

What would be the feelings and situation of a physician, called into court as a witness in a case, on which depended the life of one of his fellow citizens? Conscious that, from a want of previous study and information, he was incompetent to explain and elucidate the circumstances of the case, under the most solemn oath to declare nothing but the

truth, yet unwilling to weaken a false reputation by acknowledging his inability to explain the questions which arise, with a faltering voice and a harrowed conscience, he consigns a fellow being to infamy or death, rather than confess that he is not thoroughly versed in the principles of his profession. But should accident, or a combination of circumstances, hereafter prove the unhappy victim of his errors to have been guiltless, what then must be the sensations of a man, who has thus, by ignorance and presumption, hurried him to an untimely and ignominious death? Where is now the reputation he so vainly endeavoured to preserve, and the station in his profession he strove so unwarrantably to maintain? They are gone! irretrievably gone! Shunned by the world, and pointed out as an object of detestation and scorn, his prospects, once fair, are blasted; his character ruined; and harrowed by the stings of conscience, he speedily follows his victim to the grave. This is no ideal picture; it is one that has been presented to the world but too often. Turn to the records of public justice of every country, and there will be found too many cases, where the ignorance, the wilful, the criminal ignorance, of medical witnesses, has been the means of consigning the innocent to infamy and death, and permitting the guilty to escape, and perpetrate new crimes.

There are, perhaps, few situations in which the general malignity of popular clamour is more conspicuously evinced, than in cases of supposed murder. No sooner is a person suspected, than rumour, with her hundred tongues, spreads it far and wide, and exaggerates every circumstance that may tend to criminate the unhappy prisoner. To young practitioners, these are deemed favourable occasions for displaying their medical discrimination, and attracting public attention; but they should be extremely cautious; for opinions hastily promulgated, and perhaps wholly unfounded, or even based on supposititious facts, may influence the multitude. What then is the consequence? The accused is publicly condemned before he is judicially tried; and

may at last fall an innocent victim to ignorance and prejudice.

To gentlemen of the bar, an acquaintance with medical jurisprudence is as imperative and requisite as to the physician. By a knowledge of its principles and facts, they will be enabled to estimate and weigh the validity of evidence, and to trust or distrust the opinion of a medical witness: for, as I have already observed, the contradictions and diversified statements which have characterized their testimony, are too well known to need elucidation. In such cases, the advantages a lawyer would possess by being versed in medico-legal knowledge would be exceedingly great. He would be enabled at once to overset or invalidate the whole testimony of a witness, and impress on the minds of the jury the weakness or fallacy of his statements and deductions.

The science of medical jurisprudence has been more studied and elucidated in Germany than in any other part of the world. It there always forms part of a medical education. In France, also, by the labours of modern anatomists and chemists, it has reached a degree of perfection that entitles it to a high rank among the sciences.

The names of Belloc, Mahon, Foderé, and Orfila, are worthy of the enlightened age that produced them. Their works are proofs of the vast assistance medicine and its collateral branches have rendered to the elucidation and explanation of some of the most abstruse and disputed points of law.

England was for a long time behind the continent in estimating the value of this science. It has only been within a very few years that it has attracted that attention which it so richly deserves; but at present it is eagerly cultivated and diligently followed. The learned and excellent works of Dr. Gordon Smith, and of Paris and Fonblanque, are characterized by the spirit of research and zeal they manifest for the more general dissemination of this useful knowledge.

In this country, I am sorry to say, it received but little encouragement, previous to the appearance of the very recent work of Dr. Beck, when the Collection of Tracts, published by Dr. Cooper, was the only work we possessed on the subject. These, though excellent in themselves, gave nothing more than a mere sketch or outline of the science. Since the publication of Dr. Beck's work, however, it has begun to attract that attention to which it is so deservedly entitled. May it prove but the commencement of a new epoch in the history of American medical science, and remove the opprobrium that has too long rested on physicians, when called on by the laws of their country to explain and elucidate facts allied to their profession.

I may conclude in the forcible and eloquent language of the illustrious and immortal Rush. "To animate you to apply to the study of medical jurisprudence, I beg you will recollect the extent of the services you will thereby be enabled to render to individuals and the public. Fraud and violence may be detected and punished; unmerited infamy and death may be prevented; the widow and the orphan may be saved from ruin; virgin purity and innocence may be vindicated; conjugal harmony and happiness may be restored; unjust and oppressive demands upon the services of your fellow citizens may be obviated; and the sources of public misery in epidemic diseases may be removed, by your testimony in a court of justice. Nor is this all. By cultivating the science I am now recommending, you may extend its benefits beyond our courts of justice, to the legislatures of our country, and thereby become the means of obtaining laws founded upon modern discoveries and opinions in physiology, which shall place testimony, as far as it relates to the morbid states of the different faculties of the mind, upon such a basis, as to relieve judges and jurors from the painful necessity of acting in a discretionary manner."

ART. IV. *Remarks on the Disease termed Bronchocele, which prevailed in Pittsburg and its vicinity.* By WILLIAM H. DENNY, M. D. of Pittsburg.

IT does not appear that this disease prevailed among the French, who, nearly a century ago, occupied the site of Pittsburg, as a military post. Some of the old inhabitants of Fort Duquesne, who were living lately at Auka and Detroit, had no recollection of such a deformity on the banks of "La Belle Rivière." In short our knowledge of goitre does not extend beyond the first settlement and cultivation of the adjacent lands.

In 1798, out of a population of one thousand four hundred, one hundred and fifty had the complaint. Even as late as 1806 it seized some entire families, who settled in the town that year; and it is stated that, about the same period, the children in one of the common schools were all affected.

In the surrounding country, the malady was recognised in every direction, and sometimes, indeed, in airy and elevated situations, though chiefly on the waters of Chartiers, a branch of the Ohio on the south side, which, in its course to pay the first tribute to that beautiful river, meanders through a rich and early settled valley, bordered by hills of coal.

In the town, it was most common among the families on the bank of the Monongahela, perhaps from the population beginning in that quarter; but certainly not from the supposed fact, represented to the late Professor Barton, "that the inhabitants formerly drank the water of the neighbouring rivers."

The inhabitants drank well water only, from 1793 to 1806, whilst new cases occurred every year; now, when the water of the river is substituted by many for the polluted fountains of a crowded city, a recent goitre is unknown. The families on the bank have had wells for the

last thirty years. They are sunk nearly to the ordinary level of the Monongahela, yet the water differs from that of the river in its sensible qualities, and by the presence of lime.

The thyroid gland was enlarged generally in both lobes; when one alone was affected, it was most frequently on the right side. The tumour grew slowly, and in its progress involved the adjacent parts, but never adhered to the skin.

Young females were most obnoxious to the disease. A lady of my acquaintance, the mother of several children, took the complaint in her fourteenth year; her mammæ never developed themselves, and are as flat now as before puberty. Her father was twice married: the children by the first wife were all goitrous, and by the second perfectly healthy.

It did not appear that the black population, so subject to scrofula, were more frequently affected with goitre than the whites. The dog, so liable, in common with his master, to cynanchial and pulmonic disease, was often the subject, and sometimes the victim, of bronchocele.

The disease frequently terminated by metastasis to the lungs. In some, hæmoptoe supervened; and generally the sudden disappearance of a large goitre was simultaneous with the approach of a rapid and fatal consumption. There was no reason to suspect a scrofulous taint in the numerous cases that eventuated in this way, inasmuch as the patients had not the general symptoms of scrofula. The lymphatic system was not affected, the tumour was neither hard nor painful, nor attended with any discharge, as in that disease.

There were some families in town who escaped the endemic, but were subject to an almost habitual sore throat. This fact should have prompted an inquiry, which I omitted to make; whether the converse were true, and the subjects of goitre proportionally exempt from the cynanchial affections. Nor am I prepared to say, that the latter complaints have increased in frequency since the disappearance of bronchocele: but all the practitioners in the place agree,

that during the last ten or twelve years, there has been a great increase of pulmonary consumption.

In one instance only was the goitre connected with any appearance of cretinism. The subject was a kinswoman of my own; and I had frequent opportunities of seeing her, as she sat from morning to night rocking herself in her cradle, like an overgrown baby. In this person the idiotism was manifest before the neck was affected; and the latter was not more swollen than I have often seen it in persons whose intellectual faculties were unimpaired. Five or six years ago, at the age of nineteen, her goitre disappeared, and a fatal affection of the lungs supervened.

In the treatment of this complaint, the remedies often were such as were dictated by superstition and quackery. Some, for instance, rubbed the tumour daily with a piece of an old hearth stone. I knew a young girl, who lived on the top of a high hill on the Alleghany River, to get well in a few weeks while under the operation of this charm: probably at a time when a little friction may have aided the process which nature had already begun. Others, with more reason and some benefit, wore around their necks on going to bed, a stocking filled with dry salt. Bathing the tumour with a strong solution of rock alum salt had sometimes the effect of quickly reducing its size: but in the only instances I have known of its trial, the cure was immediately followed by pulmonic irritation, with slight and repeated hæmoptoe. Cicuta was also given, in conjunction with mercury, an associate whose mischievous and even fatal effects would have counteracted the efficacy of a more unequivocal remedy than cicuta: in the few cases that I have heard of, in which it was pushed to a salivation, the patients died.

A countryman on Chartiers, whose neck was so large as to impede his respiration when he walked fast, took to smoking tobacco, and in three or four weeks got perfectly well.

The burned sponge seldom failed to produce an impression on the tumour, and where it did not effect a complete

cure, at least in a recent case, the failure may be ascribed to the article not being taken long enough, and in sufficient doses. Many incipient cases were cured by a journey across the mountains, and several confirmed goitres yielded to a distant removal and a change of climate. Some relief, but no radical cure, was obtained by a change of residence within the bounds of the endemic. A young woman, whose goitre had resisted the usual remedies, left the town and resided at Williamsport on the Monongahela, where she got apparently well: she afterwards married, and her first child was goitrous.

The seton was not used: a neighbour of mine, however, tried it upon three dogs, with the effect, in two weeks, of removing the goitre from two of them; in the other, the string was got away by the bitch its mother, before the cure was accomplished; but not until the tumour, which was as large as a goose egg, was reduced to the size of a walnut. In these experiments, the seton was passed merely through the skin and integuments, and not, as recommended by Professor Quadri and others, through the substance of the gland.

Of iodine, I regret to say, that I am not prepared to report a single trial. The little inconvenience now felt by the few who have still a remnant of the disease; the spontaneous cures of many; and the fatal effects on some of the interference of art, render them unwilling at present to become the subjects of medical treatment. But have we not tried the iodine already in the safer form of burned sponge? and if the sponge has been less successful than that elementary principle, is it not because we have been too sparing in its exhibition? If there be a disease in which the advantages of powerful remedies are likely to be counteracted by rashness and ignorance, it is bronchocele, which, from its chronic and endemic character, is apt to fall under popular treatment, and the management of empirics.

The geological features of the country in which the complaint prevails, usually constitute a part in the accounts of bronchocele; and as those of the district around Pittsburg

have been associated with the probable cause of the disease, I shall briefly notice them. The country is hilly, but not mountainous; the hills in no instance exceed five hundred feet; the highest are those which border abruptly on either side of the valleys of the rivers. The town itself is seated on a dry alluvial plain, from forty to sixty feet above the ordinary height of the water; at the confluence of wide rivers, and open to a considerable extent on three sides. It does not therefore resemble a basin, as Dr. Barton conceived, in which the air became heated and stagnant; nor has the country around generated the miasm of intermittents, if we may judge from the absence of its supposed sources and habitual effects.

If it has any peculiarity, it is the abundance of bituminous coal, which is common to a circle of more than one hundred miles, but greatly degenerates in richness and quantity, as it recedes from the centre at Pittsburg. In almost every hill, there are one or two horizontal strata, the one at the base, and the other near the summit, but for the most part there is only a single stratum, seven feet thick, of a uniform level, and usually four or five rods under the brow of the hill. Where the river, in wearing its channel, has divided this secondary formation, as it were, by a vertical section, you can always perceive, at a considerable height, the horizontal black line of the coal. These "veins" may be supposed to have formed originally one uninterrupted layer, which has been intersected and broken up by the watercourses. It is a curious fact, that the soil directly over the stratum of coal, even at the distance of twenty or thirty feet, is more productive and durable than the same apparent quality of lands on hills of less height, where there is no coal.

May not this very plentiful substance, on the first clearing and cultivation of the soil, have given off from the denuded surface some peculiar exhalation, at first generating the goitre, but gradually exhausting itself, and like other miasms, disappearing as the country became more generally opened and improved?

The insensible exhalation and secret influence of its vast masses are inappreciable: but with our present knowledge of the power of sub-soils in producing miasm and disease, we are justifiable in presuming that so large and extensive a body of this peculiar production has also its effects on the constitution of the air, most probably a drawback on its numerous bounties, and deleterious to animal life.

Perhaps in those parts of Europe where there is an equal abundance of bituminous coal but no bronchocele, the exhalation was given off when the country was first cleared, which is beyond the period of history or tradition.

On the other hand, in the countries where there is goitre and no coal, a combination of other mineral or bituminous principles may effect a similar modification or constitution of the air; as in the Alps, Pyrenees, Mexico, and other volcanic regions where goitre prevails.

The idea is worth suggesting for the first time; and at all events, will only share the fate of other "probable causes," none of which apply to the circumstances of any two seats of the disease, and some of which, we have seen, form a part of the *petitio principii*.

The object of this essay was not to establish any speculative point, or to waste time in hypothetical inquiries into the cause of goitre, whilst we remain ignorant of the structure and functions of the thyroid gland.

The following remarks on this disease are extracted from Dr. Richardson's journal, in Franklin's Journey to the Shores of the Polar Sea.

"Bronchocele, or goitre, is a common disorder at Edmonton, (north latitude 52°, west longitude 106°.) I examined several of the individuals afflicted with it, and endeavoured to obtain every information on the subject from the most authentic sources. The following facts may be depended upon. The disorder attacks those only who

drink the water of the river. It is, indeed, in its worst state, confined almost entirely to the half-breed women and children, who reside constantly at the fort, and make use of river water, drawn in the winter through a hole made in the ice. The men, from being often from home on journies through the plain, when their drink is melted snow, are less affected; and if any of them exhibit, during the winter, some incipient symptoms of the complaint, the annual summer voyage to the sea coast generally effects a cure. The natives who confine themselves to snow water in the winter, and drink of the small rivulets which flow through the plains in the summer, are exempt from the attacks of this disease.

"These facts are curious, inasmuch as they militate against the generally received opinion that the disease is caused by drinking snow water; an opinion which seems to have originated from bronchocele being endemial to subalpine districts.

"The Saskatchawan, at Edmonton, is clear in the winter, and also in the summer, except during the May and July floods. The distance from the Rocky Mountains, (which I suppose to be of primitive formation,) is upwards of one hundred and thirty miles. The neighbouring plains are alluvial, the soil is calcareous, and contains numerous travelled fragments of a very new magnesian limestone. At a considerable distance below Edmonton, the river, continuing its course through the plains, becomes turbid, and acquires a white colour. In this state is is drunk by the inmates of Carlton House, where the disease is known only by name. It is said that the inhabitants of Rocky Mountain House, sixty miles nearer the source of the river, are more severely affected than those at Edmonton. The same disease occurs near the sources of Elk and Peace Rivers; but, in those parts of the country which are distant from the Rocky Mountain Chain, it is unknown, although melted snow forms the only drink of the natives for nine months of the year.

"A residence of a single year at Edmonton is sufficient

to render a family bronchocelous. Many of the goitres acquire great size. Burned sponge has been tried, and found to remove the disease, but an exposure to the same cause immediately reproduces it.

"A great proportion of the children of women who have goitres, are born idiots, with large heads, and the other distinguishing marks of *cretins*. I could not learn whether it was necessary that both parents should have goitres, to produce cretin children; indeed the want of chastity in the half-breed women would be a bar to the deduction of any inference on this head."*

ART. V. *Some Observations on the Opinions of the Ancients respecting Contagion.* By G. D. YEATS, M. D. Fellow of the Royal College of Physicians, &c.

[From the Quarterly Journal of Science and Arts.]

AN opinion having been promulgated that the ancients disbelieved in the doctrine that fevers were contagious, that is, that the disease was propagated from one individual to another by contact, it appeared to me a matter, at least of curious, if not of useful, research, to inquire how far this opinion was founded in truth. They who will take the trouble to turn over the pages of the ancient historians and poets, will soon find that the description of fevers, both by medical and historic writers, clearly shows that it was the generally received opinion, that human bodies conveyed to each other febrile infection of a highly malignant nature; and further, it is stated, that diseases were propagated by contagion and infection from brutes to the human race. It would be a matter of grammatical hypercriticism to give the etymology of the word contagion, which, of itself, as so closely connected with its Latin derivation, is sufficient to show what was the idea entertained of the mode by which

* London edition, p. 118, 119.

some diseases were conveyed from one individual to another. It will not be necessary to look into histories more early than that of Thucydides; although it is related that, after the destruction of Troy, a pestilential disease raged in Greece and the neighbouring countries of Asia; and Herodotus attributes it to the miseries consequent to, and connected with, the Trojan war.

In the second year of the Peloponnesian war, which scourged Greece for twenty-seven years, and which commenced about four hundred years before the Christian æra, a raging pestilence broke out in Athens; an invading army of sixty thousand men covered the beautiful plains of Attica, and compelled thousands of the inhabitants to seek protection within the walls of the already populous and crowded cities; thus generating and increasing, by a pollution of the air in confined habitations, a pestilential disease; accordingly, as Thucydides says, ἡ νόσος ἐπενείματο δὲ Ἀθήνας μὲν μάλιστα, ἔπειτα δὲ καὶ τῶν ἄλλων χωρίων τὰ πολυ ἀνθρωπότατα.—*Thucydid. Hist.* lib. ii. p. 134. Francofurti, 1594.

"This pestilent disease raged chiefly at Athens, and also in other places where the inhabitants were the most crowded." Diodorus Siculus, in his account of the same pestilence, declares the opinion that the disease arose in consequence of the unusual crowded state of Athens—οἱ δ' Ἀθηναῖοι παρατάξασθαι μεν οὐκ ετολμων, συνεχόμενοι δ' ἐντὸς των τειχων, ἐνέπιπτον εἰς λοιμικὴν περίστασιν· πολλὰ γαρ πλήθους καὶ παντοδάπου συνερρύηκοτος εἰς τὴν πόλιν, διὰ την ξενοχωρίαν εὐλόγως εἰς νόσους ἔπιπτον, ελκοντες ἀερα διεφθαρμενον.—Lib. xii. p. 101. "The Athenians, not daring to meet the Peloponnesians in open battle on the plain, remained cooped up within their walls, and caused pestilential effluvia; for great multitudes of people from all quarters congregating in the city, very readily generated disease by breathing a corrupted air."—The eloquent and animated description which Thucydides gives of the symptoms, clearly describes a fever of the most violent kind. It was attended with such violent thirst and evolution of animal heat, that the miserable sufferers threw themselves, into the sea, into ponds, and even into the wells, to

quench their thirst and raging heat. The art of the physicians not only was of no avail, but they themselves, and all who approached the sick, were cut off by the contagion—ἀλλ' αὐτοὶ μάλιστα ἔθνησκον ὅσῳ καὶ μαλίστα προσήισαν. P. 129.—Such was the dread created by thus catching the contagion, that people were unwilling to attend the sick; there was a mutual fear of visiting each other, and whole families perished in consequence of want of assistance; and they who braved the danger, from a principle of virtuous affection in attending their sick friends perished in heaps—καὶ ὅτι ἕτερος ἀφ' ἑτέρου θεραπείας ἀναπιμπλάμενοι, ὥσπερ τὰ πρόβατα ἔθνησκον καὶ τὸν πλεῖστον φθόρον τοῦτο ἐνεποίει. εἴτε γὰρ μὴ θέλοιεν δεδιότες ἀλλήλοις προσίέναι, ἀπωλλυντο ἔρημοι, καὶ οἰκίαι πολλαὶ ἐκενώθησαν ἀπορίᾳ του θεραπεύσοντος, εἴτε, προσίοιεν, διεφθείροντο. P. 132.—Thus, then, it appears clearly from the account of Thucydides, that the contagion not only spread from one individual to another, but what is very remarkable, as showing the belief of the virulence of the disease caught in this way, he adds, that the greatest part of the mortality was produced by this communication of the contagion—καὶ τὸν πλεῖστον φθόρον τοῦτο ἐνεποίει: and in the popular clamour which was raised against Pericles for involving his country in the destructive Peloponnesian war, he was accused, says Plutarch, of giving more violence to the pestilence which raged at Athens, by keeping the people cooped up like herds of cattle, to be infected with contagion from one another—ἀλλ' ἐν ὥσπερ βοσκήματα καθειργμένους, ἀναπίμπλασθαι φθορᾶς ἀπ' ἀλλήλων. Plutarch, vita Periclis.

Aristotle, the son of a physician, has, in one or two of his problems, proposed questions for reasons why diseases should be propagated from a diseased person to a sound one who approaches him. So prevalent was the opinion of the contagious nature of pestilential diseases, that he puts it down as a problem—Διὰ τί ποτε ὁ λοιμὸς μόνη τῶν νόσων μάλιστα τοὺς πλησιάζοντας τοῖς θεραπευομένοις προσαναπίμπλησιν; ἢ ὅτι μόνη τῶν νόσων κοινή ἐστιν ἅπασιν· ὥστε διὰ τοῦτο πᾶσιν ἐπιφέρει τὸν λοιμὸν, ὅσοι φαύλως ἔχοντες προϋπάρχουσι, καὶ γὰρ διὰ τὸ ὑπερπλεονασμα τῆς νόσου τῆς

παρὰ τῶν θεραπευομένων γινομένης, ταχέως ὑπὸ τῶ Πράγματος ἁλίσκονται. Sect. 1. Prob. vii.

"From what cause does it happen that the plague alone of all diseases especially infects those who approach the persons labouring under it? Wherefore is it that, of all diseases, mankind are more susceptible of it? Therefore, on this account, the plague attacks all who, being of a bad habit, are first seized with it; for a fomes of the disease being generated in those labouring under it, others are quickly infected with it."

No doubt can possibly be entertained here of the opinion respecting the contagious nature of plague; on the contrary, the opinion is so established and believed, that it is asked why it should be so? It is also not a little curious, that Aristotle should state, that the plague first commences in those who are of a bad habit of body; or, to speak in modern language, he conceived a predisposition of the constitution rendered the body more susceptible. The constitution, being thus impregnated with disease, generated a fomes, which readily communicated the contagion to another. I take ὑπόκαυμα to be very expressive in this way. Thus we have the complete modern doctrine explicit and clear in a single problem of Aristotle, the susceptible predisposition of the body in taking infection, the generation of a fomes, or infectious principle, readily communicating the disease to others by contact. In the eighth problem of the seventh section are some more explanations on this point; in which he observes, all are easily affected with such diseases as arise from a corrupted source, such as pestilences, for they who approach such are immediately infected, ὁ δὲ πλησιάζων τοιοῦτος ἀνάπτει.

In various parts of Diodorus's history, we find accounts of pestilential diseases as they occurred in different parts of the world, particularly among multitudes of people collected together for the purposes of war. A contagious pestilence broke out at Carthage at the time it was invaded by Dionysius the tyrant of Syracuse. Diodorus, in his account of this pestilence, the symptoms of which he has described,

particularly points out the infection and fatality produced by approaching the sick:—μετα δι ταῦτα διὰ τι τὸ πληθος των νεκρων και το τους νοσουμενους ὑπὸ τυ νόσυ διαφθάζισθαι, ουδεὶς ιτολμα προσίιναι τοῖς κάμνουσι.

"As the mortality caused by the disease was great, and as the attendants upon the sick were cut off by it, no one dared to approach the infected."—Again:

Καὶ γαρ οἱ τοῖς κάμνουσι παριδρύοντες ἑ ἱπιπτον εἰς τὸν νόσον παντες ὥστ διυὴν εἶναι τὴν συμφορὰν των ἄρρωσούντων, μηδενὸς θίλοντος ὑπηρετεῖν τοῖς ἀτυχουσιν, οὐ γαρ οἱ μηδὲν προσὴκοντες ἀλληλους ἐγκατέλιπον, αλλ ἀδιλφοὶ μὲν ἀδιλφοὶς, φίλοι δὲ τῶς συνήθεις ἠναλκάζοντο προἰεσθαι διὰ τὸν ὑπερ αὐτων φόβον.

"For all took the disease who had close communication with the sick, so that wretched indeed was the condition of those who were diseased; every one being unwilling to assist them; for not only they, who were not bound by any tie of relationship deserted each other, but brothers and friends were compelled to neglect their nearest relatives and companions, on account of their dread of the contagion."

In various parts of the history of the Romans, by the Halicarnassian historian, we find accounts of pestilential fevers which spread havoc and destruction around; and we not only can discover that these fevers were infectious, by the manner in which they spread, but Dionysius expressly tells us, that they who touched, or lived with, persons so diseased, became infected. In the 451st year before the Christian æra, and about 300 after the building of the city, a contagious fever broke out in Rome—Λοιμικὴ νόσος εἰς τήν Ρώμην κατίσκηψι, μιγίστη των ἐκ τυ προτέρυ χρόνυ μνημονευομένων ὑφ' ης οἱ μεν θιρἀποντις ὀλίγυ ἐδεησαν ἅπαντες ἀπολεσθαι, των δὲ ἄλλων πολιτῶν ἀμφὶ τυς ἡμίσεις μαλισα διεφθάρησαν, υτε των ἰατρὼν ἀρκούντων ἔτι βοηθεῖν τοῖς καμάτοις, ὕτη οἰκειών ἢ φίλων τἀναγκαῖα ὑπηρετυντων οἱ χαρ ἐπικυρῶν τᾶις ἑτίρων βυλόμινοι νόσοις, απτόμινοι τε καματηρων σομάτων, και συνδιαιτώμινοι τὰς αυτὰς ἐκείνοις νόσυς μετελαμβανον. *Dionysii Halicarnassensis Historia.* Oxoniæ, 1704, p. 645.

"The most pestilential disease ever remembered, brought destruction upon the city, by which almost all those affording assistance were cut off, and nearly one-half of the other

citizens were destroyed; neither were the physicians able to attend effectually the sick; nor the friends and domestics to administer the necessaries; for they, who willingly attended others, by touching their diseased bodies, or dwelling with them, were seized with the same malady."

Here we have both contagion and infection clearly stated; the former communicated by touching the diseased bodies, the latter giving disease to those who came within the concentrated sphere of its action. The miserable condition of the city during the ravages of this pestilence is pathetically described by Dionysius.—The stench from the unburied dead bodies, which were cast into the sewers, on the highways, and into the river, and again thrown by the tide upon its banks, contributed to maintain the disease by spreading the infection; for such was the desolation, that whole houses were deprived of their inhabitants by death. The contagion was carried into the country, where numbers perished; and the Æqui, the Volsci, and the Sabines, enemies of Rome, desirous of taking advantage of the distresses of the city, by invading it, received the infection, and carried destruction into their own habitations. The yeomanry of the country were either destroyed, or paralyzed by the febrile infection; the ground remained untilled, and famine was added to pestilence.

Interspersed in various parts of Livy will be found histories of pestilential fevers, the infection of which, it is expressly stated, was spread by contact. About the year 389, A. U. C., a fever of this kind broke out in Rome.

"Grave tempus et fortè annum pestilens erat," says Livy, "urbi agrisque nec hominibus magis quam pecori; et auxere vim morbi terrores populationis, pecoribus agrestibusque in urbem acceptis. Ea colluvies mistorum omnis generis animantium et odore insolito urbanos et agrestem confertim in arcta tecta æstu ac vigiliis angebat, ministeriaque invicem et contagio ipsa vulgabant morbos."* Lib. 3. c. vi. p. 47.

* It was a severe season, and unfortunately a pestilent year, both to town and country, and to cattle as well as men; the terrors of the people

Again, in the account which Livy gives of the fever which broke out among the soldiers during the siege of Syracuse, a siege ever remarkable by the death of Archimedes, it is clearly stated, that contact of the sick propagated the disease.

"Accessit et pestilentia, commune malum, quod facile utrorumque animos averteret a belli consiliis, nam tempore autumni et locis naturâ gravibus, multo tamen magis extra urbem quam in urbe intoleranda vis æstûs per utraque castra omnium fermè corpora movit, et primo temporis ac loci vitio et ægri erant et moriebantur, postea curatio ipsa et contactus ægrorum vulgabat morbos; ut aut neglecti desertique, qui incidissent, moriuntur aut assidentes curantesque eâdem vi morbi repletos secum traherent."* Lib. 25. c. xxvi. Carthaginians, Romans, Sicilians, all fell victims to the disease.

So prevalent indeed was the opinion of the contagious nature of pestilential fever or plague, that we find in medical writings, when the authors wish to represent the infectious nature of disease, they compare it to the plague. Thus Aretæus, one of our best and most accurate professional writers, in giving an account of the nature of elephantiasis, and wishing strongly to impress on his readers the idea of its highly contagious nature, says:

Ατειρὴς μὲν καὶ φοβερὸν, θηρίῳ γὰρ ἰδίῃ, δεῖος δὲ ζυμοῦντε καὶ ξυνδιαι-

---

increased the violence of the disease, on account of the flocks and husbandmen received into the city. This collection of animals of every kind, distressed the townsmen and rustics crowded together in small houses, by their unusual odour, by heat, and watching; and attendance upon each other, as well as contact itself, spread the disease. ⊖

* Pestilence made its appearance; and this common evil quickly turned the thoughts of both parties from warlike matters; for in the autumnal season, and in places naturally unhealthy, the heat, being still more intolerable without than within the city, affected almost every one throughout both camps. At first they sickened and died from the state of the season and the unhealthiness of the place; and subsequently attendance on the sick, or simple contact, spread disease. Those attacked, were either neglected and deserted, or their friends and attendants perished under the influence of the same disease. ⊖

τᾶσθαι, ϰ μεῖον ἢ λοιμῶ· ἀναπνοῆς γαρ ες μετάδοσιν, ῥᾳδίν βαφή.—Θηραπεια Ελεφαντος.

" It is a terrible and unsightly disease, putting on the appearance of the beast: there is great danger too in taking food with one so diseased, as much as with one afflicted with the plague, for the infection is readily caught by a reciprocity in respiration."

Galen, too, in his first book, chap. iii. *De Febribus*, not only alludes to, but directly asserts, the contagious nature of the plague; for he says, in strong language, there are none, possessing any understanding, who do not know that a pestilential condition of the air will produce fevers, as also that it is very imprudent to have any direct communication with those afflicted with the plague, on account of the danger of catching it, in like manner as in the itch, or inflammation of the eyes.

Κὰι μεν δὲ ϰὰι ὅτι λοιμώδοις ἀέρος ϰατάϛις ηνιγϰε πυρέτον, ϖδὲ τῦτο ἀγνοῦσιν, οις μέτεϛι ϖυνισεως· ωϛπερ γε ϰαὶ ὅτι συνδιατρίβειν τοῖς λοιμωτοϛιν ἐπισφαλές ϖολαυσαι γαρ ϰίνδυνος ὥϛπερ ψώρας τινός ἢ ὀφθαλμιας.

It may not be incurious to remark here, that ophthalmia is said to be contagious; and Aristotle asserts the same thing in the eighth problem of the seventh section. What is the reason, he says, that they who have close intercourse with persons labouring under the itch or ophthalmia,* are seized with it?—Διὰ τί ἀπὸ φθίσεος ϰαι ὀφθαλμιάς ϰαι ψώρας οι πλησιάζοντις ἁλίσϰονται;

The public are well acquainted with the discussion which has taken place respecting the contagion of that species of ophthalmia, which so sorely afflicted our army in Egypt.

In the sixth chapter of the fourteenth book of the history of Ammianus Marcellinus, where he describes the vices of the people of Rome, he alludes to a disease of a highly infectious nature, at a period of time about three hundred and fifty-three years after the birth of our Saviour. It appears

* Dr. Yeats should have said " under *consumption*, itch, and ophthalmia."

to me to be almost impossible to say what the disease was, but it is sufficient to state that the account describes it to be so exceedingly infectious, that the servants sent to inquire after those who were ill, were ordered to undergo purification before they returned home. "Et quoniam apud eos, ut in capite mundi, morborum acerbitates celsius dominantur; ad quos vel sedandos omnis professio medendi torpescit: excogitatum est adminiculum sospitale, ne quis, amicum perferentem similia, videat: additumque est cautionibus paucis remedium aliud satis validum, ut famulos percontatum missos quemadmodum valeant noti hâc ægritudine conligati, non ante recipiant domi, quam lavacro purgaverint corpus. Ita etiam alienis oculis visa metuitur labes."* Here we have not only the dread of contagion being communicated from one individual to another, but precautions were taken to prevent the infection being carried by the clothes or person of a second individual to a third. Whatever particular condition or nature of disease "labes" may be supposed to mean, it is, nevertheless perfectly clear that an infectious principle, communicable through the medium of another was feared and avoided. Ammianus, however, in the fourth chapter of the ninth book, describing a pestilence which raged at Armida in Mesopotamia, when it was besieged by Sapor, king of Persia, A. D. 359, and in giving the different opinions which were held respecting the origin of pestilential diseases makes the following observations, in which "labes" is evidently used as disease. Adfirmant etiam aliqui, terrarum halitu densiore crassatum aera emittendis corporis spiraminibus resistentem, necare nonnullos: quâ causâ animalia præter homines cætera jugiter prona, Homero auctore,

* As severe diseases existed among them, which defied all professional relief, a preservative mode was planned, that no one should see a friend thus suffering; and to a few cautions, another sufficiently effectual remedy was added, that the servants sent to inquire the condition of those who were ill, should not re-enter their homes before they were purified by washing. Thus was a malady feared, seen even by the eyes of others.

et experimentis deinceps multis cum talis incesserit labes, ante novimus interire."*

To the facts, which have been adduced from medical and historical writers respecting contagion, may be added the descriptions and opinions of the poets. The classical reader will feel a pleasing interest in bringing to his recollection the readings of his earlier days; and will, therefore, be gratified by the perusal of quotations from the writings of those authors whom he has probably often had in his hand. In the beautiful description from the first eclogue of Virgil, where he characterizes himself under the name of Tityrus, and the Mantuans under that of Melibœus, (who had been spoiled of their lands to enrich the followers of Augustus,) the latter thus addresses him:

"Non insueta graves tentabunt pabula fœtas,
Nec mala vicini pecoris contagia lædent."†

Thus, as on a subject well known, Melibœus congratulates Tityrus that his cattle will not be exposed to the contagion of a neighbouring herd, as by the interest he had, through Mecænas, with Augustus, he was permitted to retain his Mantuan property, and was not, therefore, obliged to remove his flocks, to other and untried pasturage. In the third book of the Georgics, Virgil is still more explicit and clear respecting the contagious nature of disease in cattle, for he describes the symptoms of one becoming ill, and desires it may be immediately attended to.

——— "Priusquam
Dira per incautum serpant contagia vulgus."‡

---

* Some also affirm that persons are killed by the denser vapour from the earth resisting that emitted from the pores of the body; whence, according to Homer, and many experiments, other animals besides man, when attacked by such a disorder, perish before we are aware.

† "Your teeming ewes shall no strange meadows try,
Nor fear a rot from tainted company."
Dryden.

‡ "Ere in the faultless flock the dire contagion spread."
Ibid.

The other Roman poets of nearly the same period are equally descriptive and explicit in their accounts of pestilential diseases, as propagated by contagion, as we read in the pages of Lucretius, Ovid, Lucan, and Silius Italicus. I cannot avoid the pleasure of quoting, from the two former at least, their highly poetical descriptions. Lucretius, in his beautiful account of pestilential fever, unquestionably taken from the historical statement of Thucydides, evidently describes its infectious nature. Its malignancy and rapid propagation from one individual to another by contagion, are unequivocally stated.

> " Quippe cum nullo cessabunt tempore apisci
> Ex aliis alios avidi contagia morbi
> Lanigeros tanquam pecudes et bucera secla;
> Nam quicunque suos fugitabant visere ad ægros,
> Vitai nimium cupidi mortisque timentes
> Pœnibat paullo post turpi morte malique,
> Desertos ope expertes Incuria mactans,
> Qui fuerant autem præsto contagibus ibant."*

Ovid, in the seventh book of his Metamorphoses, gives an animated and highly poetical account of the plague which raged in the island of Ægina; and we find the symptoms and calamitous circumstances attending the disease similar to those as described by the masterly pen of Thucydides; we must therefore conclude that it is either a fiction of the poet's, as a copyist, or an account of a disease, similar to the Athenian pestilence, as it occurred in an island of the Grecian Archipelago. However that may be, the idea of the contagious nature of the pestilence is determined and unequivocal, clearing showing that the poet is stating an

* " Besides the fierce infection quickly spread.
Like rotten sheep they die in wretched state,
And none to pity or lament their fate.
Those wretches, too, that greedy to live on
Or fled or left infected friends alone,
Straight felt their punishment, and quickly found
No flight could save, no place preserve from wound."

CREECH.

opinion generally received in his and the preceding times. After describing the calamitous havoc caused by the spreading of the disease, the fields and roads being strewed with the bodies of the dead, the air corrupted with the effluvia of the putrefaction, he adds, the contagion is thus spread far and wide:

—— * "dilapsa liquescunt
Afflatuque nocent et agunt contagia latè."

Human aid is of no avail, for the faithful attendant, in his solicitous care of the sick, by a near approach catches the contagion, and is thereby hastily hurried to his grave.

"Nec moderator adest inque ipsos sæva medentes
Erumpit clades, obsuntque autoribus artes;
Quo proprior quisque est, versitque fidelius ægro
In partem lethi citius venit."

Instead, then, of having any doubts on the opinions of the ancients respecting the propagation of disease by contagion and infection, we have ample proof, from the writings of their philosophers, physicians, and poets, not only of the existence of such an opinion, but of precautions taken to prevent the spreading of the infection. In the reading, however, which I have gone through, I do not recollect to have met with a passage describing any strictly precautionary means, except in Ammianus Marcellinus. I am, nevertheless, inclined to believe, that by a deeper perusal of the ancient Greek and Roman authors, we should find that methods were adopted for preventing the communication of contagious miasma; not, however, with that philosophical accuracy and success which the improvements in modern science have produced. Many works, besides those I have read, remain to be examined, as well as a more critical perusal of them; but what I did read was so much to the point, and so satisfactory, that it was unnecessary to proceed further.

* Scilicet Corpora.

ART. VI. *Observations on the late Epidemic Catarrh, as it appeared in this City, during December,* 1824, *and January and part of February,* 1825. By W. P. DEWEES, M. D.

IN the beginning of December, 1824, a great number of children were attacked with catarrhal affections, which, from the similarity in the mode of attack, progress, and termination, might be justly esteemed as the visit of an epidemic. This disease was principally confined in its commencement to children under six years; for it was rarely observed to attack those of greater age; and still more rarely adults. It generally seized all the children in a family, which were younger than the period just specified; if there were older ones, they very often escaped, sometimes for the period of several weeks; but at the expiration of this time, they were almost certain to have their turn; and towards the decline of this epidemic, which was about the middle and latter end of January, 1825, adults became obnoxious to a severe form of it.

The moist and mild state of our atmosphere is well recollected by every body; nor was this condition confined to this city; it extended nearly over the whole continent. It would seem that the progress of epidemics is by a regular march from some one point; and their advance can be distinctly marked by the general similarity of their characters, and prevalence of winds from the originating point; and though they may be and are oftentimes modified in different portions of the country over which they pass, by causes which neither present themselves to the eye, nor become amenable to our powers, yet they do not altogether lose their distinctive marks; and may be distinctly recognised by these marks whenever they appear. Thus at Boston, the place, perhaps, where our last epidemic commenced, it bore a different character from that which prevailed at New York; and when it arrived in this city, it differed, in

some respects, from both. Yet in all the modifications we have understood it to have suffered, this epidemic did not lose altogether its natural or original character.

We have taken, however, the remarks just made from general report, rather than from the descriptions of medical men belonging to either of the two places now named; we lament we have to do so, but as no account of the disease has yet reached us, of the precise form it assumed in either Boston or New York, we are obliged to make use of the only information in our possession.

It would seem, also, that the type of an epidemic will vary in the different portions of a country over which it may pass, by certain contingencies of locality, or causes over which we have no control. Thus, while it may assume a well marked inflammatory type in one place, and require for its cure extensive or repeated depletions, at another it will not bear them, or at least, from the mildness of the form it has assumed, may not require them, or it may offer an essentially opposite character. On this account, it becomes highly important, that a description of the disease, together with its mode of treatment, should be given by those who have witnessed it, that its various forms may be ascertained: and with a view to contribute our mite to this desirable end, we have ventured to give the following description of its appearance in this city.

We have already noticed, that this epidemic assumed in this city a catarrhal form; and was in its commencement confined to young children. We do not recollect an instance of its attacking a young child above six years, in the beginning of its career; but it seemed that none were too young to escape its influence. It appeared to pervade the whole city in the course of a few days; and children in the month appeared to be as liable to it, as those who were freely breathing the external air. Its character in this city varied so little, that a description of a single case might answer for all; and the type was so uniform, that it might be said to be strictly inflammatory, though differing in degree of intensity.

We have neither heard of nor witnessed a single case of typhoid type, though we prescribed for several hundreds of children labouring under this complaint. It was rarely fatal; and only so in general when it attacked those of feeble constitution, or those who had a predisposition to pulmonary affections, or where it followed whooping cough. It was, however, occasionally very ferocious in its attack, and sometimes, nay generally, very permanent in its duration.

As a general rule, it was more severe with children above two years old and upwards, than with younger; and still more so with adults. It rarely happened that it did not attack several in a family; and in some instances, every member of a family. Many were able to attend to business, and children oftentimes were not altogether confined to bed; but in such cases the disease, especially with adults, was long protracted, owing perhaps to unavoidable exposure, or the neglect of proper care. It was, however, observed in almost every instance, that convalescence was tedious and uncertain; and there was a strong disposition to relapse upon slight provocation. Strength returned slowly, and among adults a rheumatic painfulness was felt in all the muscular system. It was also noted, in such habits as were disposed to rheumatic affections, that the complaint showed itself in that form, though a never failing symptom of this epidemic, namely, cough, always accompanied this, and every other form it assumed.

Indeed, the form of this disease was almost always modified in adults by the nature of their predispositions, when any such existed; thus in some, as just stated, we had rheumatism, and this in several instances which fell under our notice, of a very severe kind; others were more liable to the visitations of gout, though not at the accustomed periods of its attacks, &c.

In adult females, it was observed in general that the cough was more severe than in males; and this was especially the case where there was any tendency to pulmonic affections. There were many cases of abortion with married

women, premature labour was frequent, and unusually severe afterpains followed delivery. The lochia were more than ordinarily abundant, and the "getting up" was almost always more uncertain, as well as tedious, than in common times. The menses were also unusually abundant; and in several cases we witnessed much pain during this evacuation, as well as the expulsion of coagula, where neither of these conditions was common to those women before. In those disposed to "sick headach," it was almost sure to be, not only unexpectedly provoked, but attended with severe bilious vomitings, which rendered the stomach difficult to appease.

The bowels were almost universally torpid, especially with children; and the secretion of urine was generally diminished, and that which was evacuated was high coloured, of strong smell, and for the most part without deposition, even after convalescence had commenced. In the severe cases in adults, as well as in those of the older children, delirium was not unusual, especially just after awaking from sleep.

The liver appeared almost always to be affected. This was manifested, at first, by the almost entire absence, and then by the large secretions, of bile, about the fourth or fifth day. This was more remarkable in children than in adults; and when this happened, it was almost sure to be followed by an abatement of the most severe symptoms: indeed, this evacuation seemed to be almost a sine qua non to recovery; for until bilious stools were observed, we rarely saw the disease yield, unless it was in cases of the mildest form; but from the great sluggishness of the bowels, or the torpid state of the liver in the beginning of this complaint, very little or no bile was observed; and the discharge of even common fæces was difficult to procure.

The skin was almost constantly dry; very little heat was observed in general upon the surface, unless the part was covered; but this was soon dissipated by exposure to the air, and the skin would then, in many cases, appear rather below the natural standard. It was always a favourable

sign when the skin became moist, and a little warmed, particularly if this had been preceded by bilious evacuations.

The tongue was very little changed in general. It differed from a state of health in being rather cleaner than natural, for several of the first days. It was almost always found favourable, if it became a little white, but not loaded, after the third or fourth day, in severe cases; for this was almost sure to be followed by bilious discharges, which, as we have said above, were always important to the patient. Children who were in the act of teething, frequently had slight ulcerations on the tongue, which appeared very painful, and produced a great flow of saliva.

Having given a general history of the late epidemic, as it showed itself among children, as well as adults, and noted its influence upon several parts of the animal economy, we shall proceed to give a description of the particular symptoms by which it was characterized, and the mode of treatment.

This disease was rarely preceded by a distinctly formed chill, though there was a sensation of coldness, or successive slight rigors. This was followed, however, by reaction; and though there was but little heat of skin, yet the pulse was constantly increased, both in force and in frequency. This was either preceded or accompanied by sneezing; a somewhat copious discharge of a thin, transparent fluid, which sometimes excoriated the nostrils, and which gave rise to what the old women term the "snuffles;" a rattling in the trachea of loose mucus by respiration, and a frequent, and oftentimes very severe, cough. There was very little oppression about the chest in the commencement of the attack; and when it did take place, appeared to be owing to the abundant secretion in the air cells of the lungs; for when the patient vomited, either spontaneously or by art, this oppressed condition was almost constantly relieved, though fresh accumulations would soon take place, and the same train of symptoms would again show themselves.

It rarely happened that the patient puked spontaneously;

for the stomach seemed insensible, as well as the bowels. This was particularly the case with children who were too young to discharge the accumulated phlegm by voluntary efforts; so that the stomach was to be considered only as indirectly inirritable, as the quantity of mucus swallowed protected its coats from being acted upon by emetic or other remedies; for after discharging the contents of this viscus two or three times, it was subsequently found to be much more easily affected; and this might, perhaps, in some measure, account for the seeming torpor of the bowels, since this insensibility appeared to be but indirect, or accidental; for after copious bilious and mucous discharges, the evacuations were more easily and plentifully procured.

When the cough became violent in children, the secretion of mucus was constantly observed to diminish; and that which was occasionally ejected was more tenacious, and was delivered from the trachea with more difficulty, than before the aggravation of this symptom. At this time the whole mucous surface connected with respiration appeared to undergo a similar change; for now the Schneiderian membrane scarcely secreted any, and the nostrils becoming dry, the child ceased to snuffle.

Whenever the nose became dry, or in other words when the membranes of the nostrils ceased to secrete, it was certain a more aggravated form of the disease was about to take place; and from this moment fever, cough, and difficulty of breathing were sure to be increased. The child would now become restless; its skin increase in warmth, or become colder than natural; its cheeks flush or become too pale; the cough so harassing, as to interrupt sleep; and sometimes during a spell of coughing the child would have a suspension of respiration, become lived in the face, and violently agitated, as if about to suffocate in a moment. This state would be almost always followed by a fit of loud crying, as if the child was in pain; it would then become languid, pale, and bedewed all over by a cold, clammy sweat, which would continue until the system would again react.

The disease in its commencement would seem to be confined to the Schneiderian membrane; and its attack could almost always be ascertained by the redness at the external edges of the nostrils, and their lining membrane; by sneezing; by the itching of the nose, as detected by the child constantly rubbing it; by an increased secretion of mucus within the nostrils, giving rise to "snuffles;" by the eyes becoming watery, showing distinctly the condition of the mucous membranes of these parts. After the disease had continued in this form for two or sometimes three days, the irritation would travel to the windpipe, and eventually occupy the whole lungs. Cough and copious expectoration would now follow; and if the disease was briskly attacked by proper remedies, the discharge of mucus from the lungs and windpipe would be maintained; and though, as was almost constantly observed, the expectoration never seemed absolutely to relieve the cough; yet the latter was sure to be increased, if this was arrested when the inflammation or irritation transcended the secreting point, and the situation of the child rendered more decidedly dangerous; nor was it relieved from this situation but by a reduction of this condition by appropriate remedies.

It would be perhaps impossible to determine the precise proportion of those who may have been considered dangerous with this disease, to those who did not appear to be in jeopardy; but we believe that there was not more than one of this kind in ten. When danger threatened, it was always the consequence of an aggravated condition of almost all the original symptoms. Thus, when the membrane of the nostrils was much inflamed, there would be a dryness of the nostrils; when this extended to the trachea, and the bronchial ramifications, there would be a diminished secretion of mucus, an increase of cough, a consequent difficulty of expectoration and respiration, with augmented fever.

On the contrary, when there was no danger, there was a prodigious secretion of mucus from the nose, trachea, &c. with a pretty frequent cough, which seemed almost

to be necessary to relieve the air cells of the lungs from the load of mucus, and in this form the disease would continue, without much variation, from five to twelve days. This disease never seemed to leave the patient suddenly, as we sometimes observe in common catarrh, by a plentiful discharge of mucus and an immediate reduction of pulse; but, on the contrary, would continue an indefinite period without any apparent critical effort, and, if we might use the expression, would cease only after it had exhausted itself, unless it was in cases which became rather suddenly violent, and were met with a corresponding force of remedies. When this happened, the disease appeared to yield much more quickly than in the milder forms of it, but always left behind a great susceptibility to renewal, though in a weakened degree.

In some few instances, the disease attacked ferociously, by high fever, severe cough, great oppression, slight hoarseness, and evident local determination to some portion of the costal pleura: in a word, a genuine pleurisy, of a highly inflammatory type, was induced, which, when not immediately attacked, and proportionably relieved, terminated, it is said, in a very few days in death. We, however, were fortunate enough not to witness any case of this kind, though we were informed they occasionally presented themselves; but happily they were rare.

In some other instances still more rare, we are informed a genuine peripneumony was produced, and the patients died in a short time from a congested state of the lungs.

In the severer forms of this disease, it was by no means unfrequent for the child to be attacked with violent pain, which appeared to have its seat in the bowels; this state was almost sure to be followed by copious bilious discharges, as we shall again have occasion to say.

In adults, the disease was principally confined to the chest, and resembled a severe catarrh; in them it was generally ushered in by a coldness, followed by heat, which was followed by perspiration during some period of the night, but without a complete solution of the fever, though

with a decided remission of it. The coldness was rarely repeated in form of a regular paroxysm; though the sensation of chilliness was frequently experienced, by any reduction of external temperature, from some increased sensibility of the skin. Headach was common; and this constantly aggravated by every effort to cough. The appetite was pretty constantly impaired; but rather from a want of discrimination in the powers of taste, than a disgust arising from a condition of the stomach; while in others it seemed to give a preternatural degree of it.

In adults, also, there was almost constantly a pain nearly in the centre of the sternum, which seemed to pass to the spine, or under one of the scapulæ. This, however, was not increased even by a full inspiration, as in pleurisy; though some uneasiness was experienced, especially after the effort was made. This pain continued nearly always during the whole period of the active stages of the disease, and even accompanied convalescence. It was particularly troublesome during the act of coughing; and though it could not be called an acute pain, it nevertheless embarrassed this effort so much, as to render it extremely unpleasant.

The cough, in almost all the cases of this disease, was peculiarly severe and distressing; for it was less amenable to remedies than any other acute cough we ever remember to have witnessed; and though almost constantly accompanied by copious expectoration, it was not relieved by it; nor did it abate in either severity or frequency in the more obstinate cases, until the system had been considerably reduced by appropriate depletion, and would safely bear considerable doses of opium in some form or other.

There never, perhaps, was a disease of the same extent, which so uniformly yielded to the same general plan of treatment; it became almost the practice of routine; yet much depended upon the strict observance of the rules for diet, conduct, and use of medicine, as prescribed by the physician. Deviations from the proper course were almost sure to bring their penalties with them; and when these

aberrations were considerable, or happening when the disease was pretty active, serious consequences sometimes followed the neglect: and we believe we may safely add, we have never witnessed a disease in which the progress to convalescence was more slow, or so easily made retrograde. In some instances, indeed, at this stage of the complaint, the pulse seemed no longer to be a safe guide to direct a change of diet, or for the employment of the mildest tonics; experience in the use of certain articles alone could secure to the patient a benefit from their employment.

So far as we observed, the character of this disease was uniformly inflammatory; the remedies, therefore, were always predicated upon this state of the system. Our plan and views were consequently plain, and free from that embarrassment which must always attend mixed cases, or those where their termination would be suddenly, and by an opposite condition of the system.

With children, (and they were by far the greater number of the sufferers,) we constantly directed a strictly antiphlogistic regimen; that is, forbidding the use of all animal substances whatever, or in whatever form they could be presented. To such children as were withdrawn from the breast, we ordered their diet to consist of a little milk and water, barley water, or flaxseed tea: to be kept in one atmosphere, and this of a pretty uniform temperature. This last direction we found of the greatest importance, for we are persuaded it contributed very much to their recovery. We never permitted them to sleep in a cold room, after having breathed a warm air all day; their sleeping rooms were therefore converted into their nurseries, or their nurseries were made their sleeping rooms.

We almost constantly commenced by purging them with castor oil, magnesia, or calomel; and as soon as their bowels were well opened, we ordered the hive syrup,* in proper doses, every hour or two, during the day, with the

* The syrupus scillæ compositus.

brown mixture,* or the black drop,† at night; and these to be repeated according to circumstances. When there was much loose mucus rattling in the trachea, we gave the syrup more frequently, say every fifteen or twenty minutes, or gave it in larger doses, until it nauseated, or even puked; or if the respiration was oppressed, we gave it to full vomiting, and this with the most decided advantage.

Was there much fever, and especially if this was accompanied with laborious breathing, and above all, was there any evidence of an inflamed pleura or lungs, we bled, leeched, cupped, and blistered, as the necessity for these operations declared itself: and these were repeated, as the occasion might require. In young children, who cannot express their sensations, we are obliged to rely upon certain signs for the detection of pleurisy or peripneumony; therefore whenever we found a hot skin, active pulse, a difficult or oppressed respiration, crying after coughing, and the neck and head thrown backward, and the back stiffened when the child was about to be raised, we immediately ordered the loss of blood from the arm by the lancet; from the chest by leeching; or from between the shoulders by cups; as we were sure that there was local inflammation within the chest. The loss of blood was followed by blistering the chest, or the inner and upper parts of the arms, near the axillæ. In this condition of the system just spoken of, a marked advantage was obtained by a solution of the tartrite of antimony in appropriate doses; such as the tenth or twentieth part of a grain, every hour or two, as the stomach would bear it. This remedy was found very uniformly to diminish fever, determine to the skin, or open the bowels. Should the bowels not have been well purged at this period, we persevered in the use of the purgative remedies, especially small and repeated doses of calomel, until they were plentifully evacuated, before we commenced the use of the tartrite; after this end was answered, we employed the antimony as just stated.

* Mistura fusca, vel mistura ad tussem.

† Tinct. Thebaic. acetat.

The repetition of the bleeding was governed of course by the existing symptoms; but we never hesitated, when these were not alleviated, or where they recurred after abatement, if the pulse was still pretty firm, or the oppression great. This second, or sometimes third, blood-letting, was followed by blistering of the chest, &c. if the symptoms did not yield to the blood-letting, cupping, or leeching. Full puking was sometimes found highly useful after this reduction of the system, followed by the use of calomel purges. We remarked above, in severe cases, it was not uncommon for the child to complain of great pain in the bowels, about the fourth or fifth day of the disease. This pain, in a few instances, was so extreme, as to make us direct our whole attention to it; this we did, by giving laudanum, either by the mouth or by injection, until it was relieved. At first, we were a little fearful of using the laudanum; we therefore purged with castor oil, but without affording the desired relief, and was at length obliged to have recourse to it; this never failed to procure ease, but the pain was almost sure to return after its effects had gone off. When this happened, we gave calomel until it operated freely, and should bring off large quantities of very dark green, tenacious bile, upon the presence of which the pain seemed to depend. After this was observed, we constantly had recourse to calomel, in cases of pain, after having first quieted it by laudanum, or, what we found to answer better, as it did not constipate the bowels, the black drop,* in suitable doses.

After these bilious discharges showed themselves the purging was kept up by magnesia, castor oil, or the syrup of rhubarb, until the character of the evacuations was changed. It very rarely happened that these colicky pains returned, after even the first doses of the calomel had procured bilious stools; and the cough, with the febrile symptoms, were sure now to abate, and convalescence to ensue.

The cases which required bleeding and blistering were

* Tinct. Thebaic. acetat.

comparatively few; and when these proved successful, the recovery was more rapid than in the milder ones, though more danger absolutely accompanied such instances.

As a general plan of cure, it might be said to consist, 1st. in a very low diet; 2d. in the early and free use of purgatives; 3d. in the pretty constant exhibition of expectorants; and 4th. the repeated use of emetics. Indeed, in the milder cases, the hive syrup, carried occasionally to puking, was found sufficient to effect a cure, especially if aided by confining the patients to a uniform temperature.

Adults required the same general plan of treatment; unless in those cases where this epidemic constitution of the air called into action the latent predispositions above mentioned; in such cases, the treatment was suited to the general character of the disease, which this disposition had awakened; but at the same time the cough, which never failed to attend the awakened disease, demanded attention.

Art. VII. *Contributions to Pathological Anatomy, &c.*

By John D. Godman, M. D.

DISEASED actions produce changes in the living body infinitely various and exceedingly singular in character, which, in the present state of our knowledge, are often altogether inexplicable. It is true, that in numerous instances we can trace the connexion between cause and effect, especially after acute or chronic inflammation has existed, where manifest injury has been done to important organs by external violence, or where great irritation has been long continued in various parts of the system. But, in a great majority of cases, we have no guide to a correct understanding of the mode in which such alterations are produced, nor can we form any satisfactory opinion of the causes de-

ciding their commencement. We frequently find tumours of peculiar construction growing from textures of most dissimilar nature, and we term them diseased, rather from the situations they occupy, than from any want of organic characters in themselves. If these bodies were more uniform in place and appearance, we might consider them in the light of parasite animals, deriving their support from, but having no continuity with, the body to which they are attached. Such animals we know to exist; and not unfrequently they are supposed to be mere degenerations of natural structures, though they are invariably characterized by a generic or specific resemblance, which is inseparable from them, wherever they may be found. Tumours, on the contrary, cannot be otherwise considered than as local alterations occurring in the structure of the animal, consequent to some peculiar impression previously made on the nerves, and of necessity on the secretory or formative vessels of the part. Sometimes, as in the case I shall first relate there is a regularity of arrangement in these productions, which appears as if they were *designed* for some important purpose, though this is by no means to be admitted; in other instances, the structure is so very different from the surrounding parts, and so curiously organized, that we are led to infer, that quite as much nervous and vascular energy was necessary to their formation, as would be required for the support and reproduction of the regular organs of the system. Much, however, remains to be discovered, before we shall be able to understand the operation of the agents by which tumours are excited, or the signs indicating their origin within cavities of the body, although it is at once evident how highly important, and extensively useful, such knowledge would become. Our present inability should not prevent us from carefully observing and recording every fact that may eventually be useful in elucidating this subject; nor should we consider those labours lost, which barely place effects before us, without giving us the slightest clue, by whose aid we may hope to arrive at their causes.

OSSEOUS SYSTEM.

The spinal column was frequently found slightly curved laterally, and in a few instances anchylosed at the anterior edges of the vertebræ; but the most frequent alteration discoverable in the individual vertebræ was a flattening or apparent compression of their bodies, with an irregular excurvation of their superior and inferior margins. That this was the result of absorption of the bodies, and a simultaneous growth of the edges, was proved by a similar peculiarity being observable along the external margin of the crest of the ileum, which, in one or two instances, had the anterior superior spinous process prolonged, and terminating in an obtuse, roughened extremity. In one instance, the right sacro-iliac synchondrosis was entirely obliterated, and the ileum smoothly continuous with the sacrum,* and perfectly anchylosed, appearing as if it had been thus formed originally.

* As the subject of nomenclature is of as much importance in anatomy as in any other part of medicine, and we have the most stupid blunders handed down from one writer to another, in consequence of misconception, I shall subjoin what I have said in another work on the meaning of this term. "We are told that the bone terminating the spinal column, is called "os *sacrum*," because it was formerly offered in sacrifice, and hence called "sacred or holy." This fable is entirely the offspring of ignorance. The words "os sacrum" do not mean "holy or sacred" bone, but *great* bone; either because of its being made up of several pieces, or from being the base of the spinal column, or from the important organs placed in its immediate vicinity. The word Ιερος means *præstans, magnus*, as well as *sacer*. The word *sacer* is used in Latin for *great* as well as *holy*. Aretæus speaking of the reason why epilepsy was called "Ιερον νοσον," *morbus sacer*, expressly states that it was called so, not because of its being a judgment from Heaven, but because of its violence and distressing character, as the word *sacred* was used in the sense of *great*. "Και ΙΕΡΟΣ γεν το ΜΕΓΑ." [περι Επιλεψιος; Cicl. α.] In like manner we have *ignis sacer* among the Latins; and numerous instances may be selected from the Latin poets, as in the common quotation from Virgil:

"'Quid non mortalia pectora cogis,
Auri *sacra* fames.'

"Homer, speaking of the manner in which Patroclus, after thrusting his spear through the cheek of Thestor, draws him from his chariot, says—

I am indebted to my friend Dr. J. R. BARTON, for two interesting and very perfect instances of anchylosis, the one of the hip and the other of the elbow joint. These are both so consolidated as to be utterly immoveable, yet without any of that irregularity which we most frequently see after fractures, or ulcerations resulting from constitutional diseases. In the hip joint, the head of the femur is firmly united to the upper part of the acetabulum, which seems slightly widened or pressed upwards at that part. A more remarkable irregularity is to be perceived in the anchylosis of the elbow, where the union has been effected without the least alteration of the articulating surfaces, if we except a considerable elongation of the coronoid process of the ulna, and a gentle increase of thickness on the margins of the bones.

We should believe, with Dr. Barton, from these appearances, that this anchylosis resulted from simple, or at most rheumatic, inflammation of the joints. The importance of being vigilant, when there is danger of such anchylosis taking place, to prevent the members from being improperly flexed, is very obvious; for if we allow this union to form with the thigh flexed on the body, or the knee and

---

——"'As when a man
Seated on jutting rock, drags from the deep
With cord and shining hook, the *mighty* fish.'"

"If we desire further proofs of the synonymous use of the terms *holy* and *great*, we may observe in the Hebrew language there is this peculiar mode of expressing a superlative degree. The word מלך [*Malach*] signifies a king, but to express a king of great power and grandeur, the word יה [*Yah*] *God*, is prefixed to it; יה-מלך *God-King*, or Great King. The English epithet *godlike*, refers to the possession of more than human power or energy of mind, and very seldom indeed to superior sanctity."

Accident has recently placed within my reach, a copy of GALEN's treatise Περι οστων, with a commentary by the celebrated JACOBUS SYLVIUS, who makes the following remarks on the title περι του μεγα οστου: "Os μεγον, id est sacrum et magnum, hoc est, cæteris racheos ossibus maius (veteres enim μεγα, μεγαλα vocarunt,) vel πλατυ, id est latum."

* —— "ως οτε τις φως,
Πετρη επι προβλητι καθημενος ΙΕΡΟΝ ιχθυν
Εν πωντοιο θυραζε λινω και νηπι χαλκω" ΙΛΙΑΔ: Π.

"*Veluti cum vir*
Scopulo in prominenti sedens, SACRUM, hicem
Ex ponto fuvat lino et splendido ære." Carkius.

elbow bent at right angles, the deformity will be extremely unpleasant, and the convenience and comfort of the patient unnecessarily sacrificed.

Two other diseased elbow joints are represented in the plate, both consequences of fracture. In both instances the olecranon has been broken off, and the radius driven inwards over the inner condyle. What is most remarkable in these cases is the curvation of the radius and the wasted condition of the ulna, which seems to have been absorbed to a very considerable degree, so as to reduce it both in length and thickness. These specimens formed a part of the collection of the late Dr. M'CALLA, of New Jersey.

Among irregular growths of the osseous system, we may mention the occasional prolongation of the crista galli of the æthmoid bone; in one case it was almost an inch in breadth, and a plate of bone extended for some distance from its anterior part along the curvature of the frontal bone, becoming gradually obsolete in its ascent.

*Explanation of the Plates.**

Plate I. *fig.* 1. Fracture of the radius.

Plate II. *figs.* 1 and 2. Fractures and luxations of the elbow joint.

3. Anchylosis of hip joint. } From Dr. J. R. BARTON's
4. Anchylosis of the elbow. } cabinet.

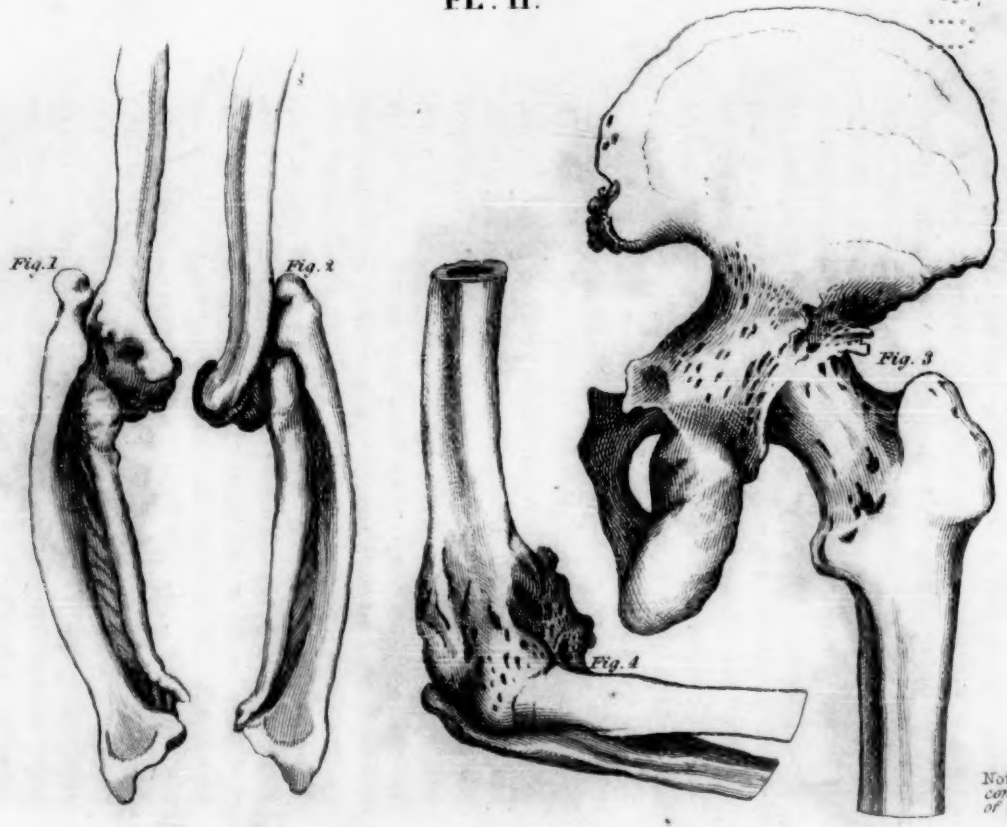
GENITAL SYSTEM.

Tumour on and within the uterus.—This subject was about thirty-five or forty years of age, having a considerable quantity of fat throughout the cellular texture, and exhibiting no external peculiarity of appearance, except a projection of the abdominal muscles on the right side, the centre of which was midway between the anterior, superior spine of the ileum and the median line; the whole of the prominence occupying the greater part of the right iliac region. The external organs of generation were lax, and

* The plates representing these bones will be given in the next Number.

Pa. 82

PL. II.



Drawn by J. Drayton.

Note. Plate 1. not engraved in consequence of the description of the case being lost..

much dilated, the vagina being covered with large quantities of mucous looking fluid, which on first examination was supposed to be the result of gonorrhœa.

When the belly was opened, a singular appearance was presented within the pelvis. A tumour, almost perfectly globular, four inches and a half in diameter, occupied the greatest part of the pelvis, compressing the rectum to a considerable degree, and nearly hiding the uterus from view. The anterior surface of this tumour was in contact, though not adherent, with the peritoneum, while its superior surface was partly covered by the ileon and head of the colon. The bladder of urine, pressed to the left side, small, flat, and empty, (of necessity, as we shall presently see,) was immediately between the anterior surface of the tumour, and the internal face of the pubes. On closer inspection, and drawing the tumour upwards, the fundus of the uterus, and the left Fallopian tube were seen low down in the pelvis, turned so as to present towards the spine of the ischium, having the rectum to pass down behind it, concealing the right tube and ovary. Both ovaries were found altered, and apparently disorganized, though closely resembling hydatids clustered together.

When the tumour, bladder, womb, and rectum were carefully removed from the pelvis, it was evident that the tumour grew from within the thickness of the cervix uteri, as the peritoneal covering of the womb, and its peculiar texture, were observed extending over it, the uterine substance becoming thinner as it approached the upper part. The tumour was hard, incompressible, and remarkably spherical, having very slight depressions or undulations on some parts of its surface. On cutting through the external covering derived from the peritoneum and womb, which was about an eighth of an inch thick at the base, and less than a sixteenth above, I was surprised to find that the whole tumour had a covering of bone, about the twentieth of an inch in thickness, so hard as to require a saw for its division. This bony envelope being divided, the tumour was cut through the centre with the knife, and the sensation

imparted resembled that produced by cutting through a mass of cartilage, which the internal substance more closely resembled than any thing else, being tough, dense, semi-transparent, elastic and apparently homogeneous. This whole tumour appeared perfectly sound throughout, exhibiting no trace of inflammation nor ulceration in any part, neither was there any sign of increased vascularity discoverable where it rose from the uterus. Its origin was three inches wide, and had no communication with the cavity of the womb.

The uterus being opened, the lining membrane looked perfectly healthy and unchanged. The cavity would have been of the ordinary size, but for the encroachment of another tumour, at the upper and back part. This second tumour was also situate within the posterior thickness of the womb, and resembled the larger one in its structure, except that it had none of the bony matter. The cavity of the womb was perfectly natural from the lower part of this posterior tumour to the os tincæ, and the depressions and curved lines on the anterior and lateral parts of the internal surface of the cervix uteri, (called *arbor vitæ*,) were beautifully and distinctly marked.

When the vagina was opened from the back part, a most unexpected circumstance was made manifest. The neck of the bladder was extensively *destroyed*, and an aperture of three-fourths of an inch in diameter allowed the bladder to communicate with the vagina, so that one or two fingers could be passed at once from the vagina into that organ. Every trace of meatus urinarius was gone, and the edges of the communication between the vagina and bladder were rounded, and smoothly cicatrized. On close inspection, the vagina showed no appearance of inflammation, though it was covered with tenacious mucus, no doubt thrown out to defend the vagina from the constant flowing of urine over its surface. In all other particulars the parts seemed natural; the rectum was but slightly compressed, there being neither enlargement of the sigmoid flexure, nor of the arch of the colon.

In considering all the particulars of this interesting case, the destruction of the neck of the bladder seems most remarkable. If we recollect the form of the tumour, and the manner in which it occupied the pelvis, we might, without much difficulty, suppose that the pressure of the tumour had caused the bladder to slough at its neck, as this organ would have been over-distended by a comparatively small quantity of water, on account of the filling up of the pelvis by the tumour, and because the situation and projection of the tumour would deprive the bladder of the assistance given under ordinary circumstances by the abdominal muscles. If we reject this attempt to account for the destruction mentioned, we might attribute it either to laceration produced during labour, or to the improper use of obstetrical instruments. If it had been produced in the former way, we should have expected some evidences of simultaneous laceration of the perineum, of which no trace was discoverable. It is possible that this injury might have been caused by the use of obstetrical instruments, though we scarcely can see in what way, unless by using improper violence. Dr. DEWEES has remarked, that the lock of Haighton's forceps sometimes does injury by including a part of the labium, or the capilli from the surface:* none of these modes of explanation can be resorted to in this case, unless we knew whether the destruction of the neck of the bladder preceded or followed the growth of the tumour.

* To obviate the inconveniences produced by the lock of the forceps, I some time since caused a pair to be made for my friend Dr. MORRELL, of Havana, by that excellent artist JOHN RORER, the blades of which were like Haighton's, having in addition the superior and inferior curvature of Baudelocque's forceps. The lock was made according to the plan of Siebold, as commended by DEWEES, with the handles of wood in the usual way, but lighter. This instrument, that may well be called the *composite forceps*, appears to be better suited to the purpose than any other, as it combines the advantages of all the forceps hitherto introduced. Mr. RORER has farther improved the excellent joint of Siebold, by taking off the projection of the nut, and giving a greater degree of obliquity to the notch. This improved joint he now makes on all the different forceps used by practitioners.

It is exceedingly probable that this tumour caused many symptoms which were similar to those occurring during gestation, and this idea should induce us to avoid pronouncing an opinion, in cases where pregnancy is imputed, without inquiring into the possibility of the existence of a tumour on the womb, or within the pelvis. In medico-legal investigations, the appearance of discharges from the vagina cannot be esteemed positive evidence that the lining membrane is the actual seat of disease, as such discharge as was found in this subject might be caused in a similar way, or be produced by the fluids thrown out from a tumour in a state of ulceration. In my Anatomical Investigations, published last autumn, I gave an instance where puriform discharge was produced by a fistulous ulcer, descending from the kidney, and opening through the cervix uteri into the vagina, in which case, all the appearances must have deceived the physician as to the true seat of the disease. In the subject having the tumour above described, we may readily discover how fruitless must have been all treatment for the incontinence of urine; and yet it is very probable that both the patient and physician might have had no idea that this incontinence was produced by a simple destruction of the neck of the bladder. Nothing but a careful examination could have led to such a conclusion; and it may be well in all cases of doubtful character to examine whether a loss of substance or malformation may not exist, the discovery of which, would at least save the patient from severe and necessarily fruitless use of medicine.

Explanation of the Plate.

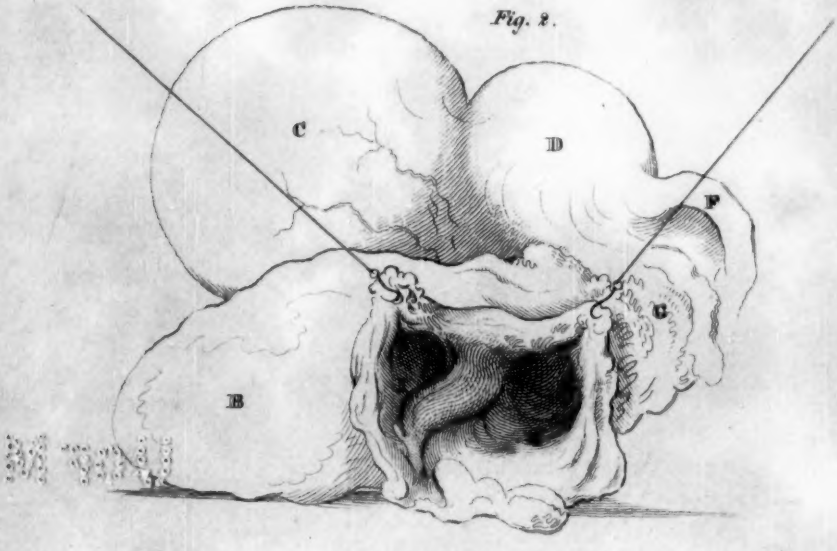
Plate III. *fig.* 1. A. pubes.
B. bladder.
C. tumour.
D. womb.
E. rectum.
F. left Fallopian tube.
Fig. 2. B. bladder.
C. tumour.

U of M

PL. III.

Fig. 1.

Fig. 2.



Drawn from Nature by J.Drayton

D. womb.
F. left Fallopian tube.
G. diseased ovary.
H. vagina.
I. lacerated entrance to the bladder communicating with the vagina.

Prostate gland.—In the last Number of this Journal, I made some observations relative to the introduction of the catheter; since that time, I have examined one subject, in which there were three perforations between the posterior part of the bulb, and the neck of the bladder. When the catheter was introduced through the urethra to the first opening, it entered this false passage very readily; when withdrawn and passed onwards, it as readily passed into the second; and in like manner, when withdrawn from this situation, it lodged in the third: when freed from this situation, and the handle slightly depressed, although it was of a large size, it entered into the bladder with facility. The prostate exhibited no other appearance of disease than a slight enlargement, perhaps owing to the lacerations, which, although irregular, were fairly cicatrized. The first perforation was through the membranous part of the urethra, and under the prostate, in the direction of the curve of the catheter; the second was through the anterior edge of the prostate, reaching to the rectum; and the third, entering a little beyond the second, passed through the whole length of the prostate, inclining somewhat to the left side. From a careful examination of the parts, there was no evidence of stricture or other disease in the canal, which was of large size, although every one who saw the openings immediately inferred that they had been produced by violence exerted in attempting to pass the catheter. Judging from all the circumstances, I should decide that this was one of those cases, (which I fear are not rare,) in which some one totally ignorant of the structure, had attempted to accomplish by brute force, what can never be properly effected without a combination of anatomical knowledge and manual dexterity.

ARTERIAL SYSTEM.

Aneurism of the Aorta.—Male subject, apparently sixty years of age, strongly muscular. A pipe was inserted in the right carotid artery, and the body injected. On opening the chest, the commencement of the aorta, uncommonly large, presented far towards the left side of the chest. A tumour of great size was found, extending from the origin of the left subclavian artery, down to the sixth dorsal vertebra, swelling out on the left side, so as to occupy the largest part of the left cavity of the chest. The tumour extended across the spine at the upper part, over the first and second dorsal vertebræ, so as to be more than two inches within the right cavity of the chest. When filled with injection, the commencement of the aorta lay immediately under the articulation of the upper ribs with their cartilages, attached by a circular adhesion; the anterior part of the tumour was within two inches and a half of the inner surface of the chest. Over this part of the tumour the trachea and œsophagus were placed; the trachea being on the left, and so much turned round as to have the membranous or posterior part exactly on the right side. In consequence the trachea was at this part flattened, having full one-third of its caliber obliterated. The œsophagus was partially covered by the trachea. At the lower part, the left division of the trachea doubled round the tumour to get to the left lung. It was compressed flat, and its caliber obliterated by adhesion. The left lung was entirely destroyed, occupied about one-third of its proper space, and was entirely hidden by the tumour. In texture it resembled a very hard liver, and gave a sensation when cut into, similar to that produced by cutting through a firm turnip.

The continuation of the aorta came from the lower part of the tumour, opposite the sixth dorsal vertebræ, though so far to the left as to be considerably curved toward the centre, before it reached the bodies of the vertebræ. It was very much enlarged, far below its separation into the common iliacs.

On removing the ribs of the left side, a fair view was obtained of the tumour. It was firmly attached to the pleura, over the heads of the fourth, fifth, and sixth ribs. On the right side a similar attachment was observed over the bodies of the fourth, fifth, and sixth dorsal vertebræ. When this attachment was cut through, the back part of the aneurismal tumour was opened. This posterior part was filled with large clots of blood, very firmly coagulated, and they rested on the vertebræ, without any intervening substance. All the left half of the fourth, fifth, and sixth vertebræ was destroyed, as if by ulceration, and this destruction extended to the heads of the ribs which were within the tumour.

Some specks of ossification were observable around the edges of the posterior part of the sac, where adherent to the vertebræ. The distention produced by the aneurism had consolidated the posterior mediastinum, in such a manner, as to render it impossible to distinguish any part of it. The coats of the aneurism were of uniform thickness, except at the edges adhering to the vertebræ, beyond which they were discontinuous.

In Baron Ferrusac's Bulletin for 1824, the dissection of a celebrated comic actor is given. This man, throughout his life, had been subject to a singular hoarseness, which was thought to be owing to some disease about the glottis, but after his death, which suddenly occurred, it was discovered that there was no original disease in any part of the trachea, but that an aneurismal tumour, very similar to that above described, compressed the trachea for a considerable extent. Although we have no knowledge of the symptoms which were present during the life of our subject, we are much inclined to believe that his voice must have been much altered by the compression of the left division of the trachea. As the œsophagus was also much compressed, difficulty of swallowing very probably existed. The use of the *stethoscope*, too much neglected in this country, would render such a disease unequivocally evident; and we should suppose that a physician who should treat his

patient for disease of the lungs, or be engaged in cupping and leeching his throat for chronic bronchitis, during a long time, would be deeply mortified to discover, by dissection, that there had been incurable disease of the heart, or aneurism of the aorta, which might have been palliated, if he had been better informed.

Explanation of the Plates.

Plate IV. *fig.* 1. Aneurism seen from above, the subject lying on its back; sternum and part of the ribs removed.

A. the heart.

B. arch of the aorta.

(*) Adhesion to the cartilage of the ribs.

C. arteria innominata.

D. left carotid.

F. trachea.

G. œsophagus.

H. aneurismal tumour, extending underneath G. and F. into the right side of the chest.

I. descending aorta.

J. cœliac axis.

Fig. 2. Lateral view of the same aneurism, the ribs of the left side taken away.

A. clavicle.

B. arch of the aorta.

(*) Adhesion to the cartilage of the ribs.

C. arteria innominata.

D. left carotid.

E. left subclavian.

F. left division of the trachea.

G. extremity of the œsophagus.

HH. tumour.

I. descending aorta.

(† †) Coronary arteries.

In two instances, I have found most extensive ossifications of the arteries, one subject being nearly ninety, and the other more than seventy-five years of age. The patches

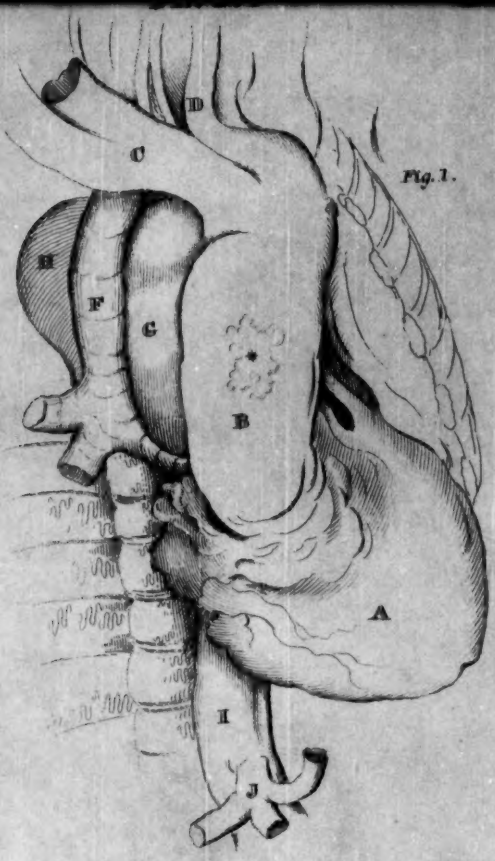


Fig. 1.

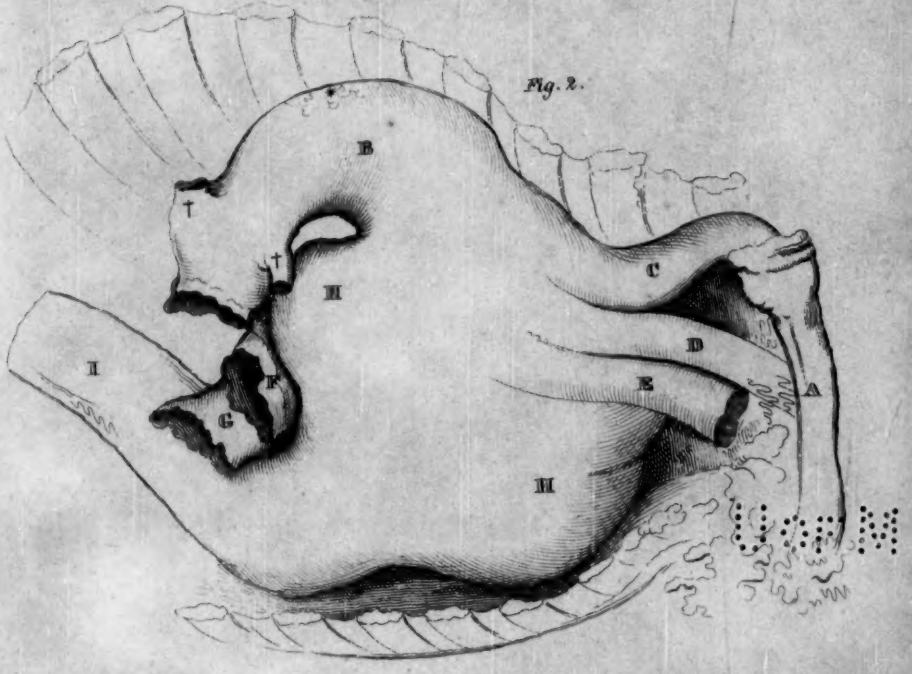


Fig. 2.

Drawn from Nature by J.Drayton

of ossification were largest in the neighbourhood of the heart; and in the second case, the superior surface of the aortic arch was literally lined with bone. At the origin of the great vessels, large irregular patches of ossification extended for some distance within the caliber. On the general internal surface of the aorta, the pieces of bone were flattened rather concave, but irregularly incurved at their edges. In all instances, they were placed between the middle and internal coats of the artery, and though occasionally projecting, were never uncovered. In these cases the ossifications were traced through all the principal arteries, and many of the smallest partook of the same morbid condition. In some parts the incipient formation of bone was made evident by a cartilaginous thickening very perceptible in the coats of the artery. In the elder subject, the tricuspid, mitral, and semilunar valves very much occupied by patches of bone, were thus prevented from accurately closing the orifices of the ventricles, as well as the mouths of the pulmonary artery and aorta.

Among the irregularities observed in the arterial system since my last report, may be noted the high bifurcation of the brachial artery, which in one case divided immediately under the clavicle, and in four others, as high as the point where the musculo-cutaneous nerve enters the coraco-brachialis muscle. But in none of these cases did either artery run externally to the aponeurosis of the biceps at the bend of the arm. I have uniformly found where this high bifurcation occurs, that a large inosculating branch crosses immediately from the radial to the ulnar, an inch below the bend of the arm, and from the centre of this, the interosseous artery is sent downwards. The more extended my experience becomes on this subject, the more am I persuaded that this high bifurcation occurs, at least half as often as the usually described arrangement.

In two instances the *right hepatic* artery was the first branch of the superior mesenteric; being, of course, nearly an inch lower down than the right hepatic usually is, and occupying the right side of the cord of vessels, ducts, &c.

belonging to the liver. It passed under the head of the pancreas and duodenum obliquely upwards, instead of being rather transverse to the epigastric region, as under ordinary circumstances. In the healthy condition, this arrangement would be of no great consequence: but in case of an indurated pancreas, or other organic change, affecting the quantity of blood sent through the cœliac, this branch from the superior mesenteric passing behind the pancreas where but slightly subject to compression, would supply the liver with the necessary quantity of blood.

The following singular result was obtained (in the winter of 1823,) by injecting from the carotid artery. I placed a pipe in the left carotid artery of a tall, slender, and emaciated subject, apparently thirty or forty years old, and having thoroughly warmed it by immersion in heated water, I threw into the body, with the ordinary brass injecting syringe, melted tallow highly coloured with fine King's yellow, which gave it a very rich hue. The syringe was filled, and emptied through the tube in the artery, three or four times. On examination, I was very much pleased to find that the fluid had returned through the veins, so as to fill them very perfectly; but on more attentive observation, my surprise was increased, by discovering that the smallest veins in both arms distinguishable by the naked eye, were filled with a material differing in colour from that contained in the arteries. In fact, the colouring matter was separated entirely from the tallow during its passage from the arteries to the veins; in the arteries, the colour was a rich yellow, deepening as it approached their extremities, and in the veins, the pure white of the tallow was entirely free from any admixture. I have not since repeated this experiment, nor was it in my power to preserve the specimens, as this circumstance occurred the day before the conclusion of my winter course, at a time when I was obliged to remove from the house I then lectured in, at an exceedingly short notice. Although the idea did not occur, until too late, to throw them into spirits, and subsequently dispose of them at leisure, I induced some members of the profession to

examine them, who were well qualified to ascertain the correctness of my observation; and I should have extended this invitation to many others, had it not been that I have uniformly found invitations of this kind accepted and neglected with chilling apathy.

RESPIRATORY SYSTEM.

Abscess and suppuration of the lungs.—Subject female, apparently twenty-five years of age, extremely emaciated, having a long neck, and very narrow chest. When the left cavity of the thorax was opened, there was no part of the lung apparent. The space usually occupied by the lung was void, and seemed to have been emptied of a fluid previous to death, as some flocculent matter, resembling whitish coagulated mucus, still adhered to the surface of the membrane lining the chest, which was red, thickened, and universally adherent to the ribs. At the lower and back part of the chest, instead of lung, there was a mass of brownish, ash coloured matter, which had several openings communicating with the cavity of the chest. When cut into, the substance seemed to be nothing more than a collection of half coagulated, puriform substance, intermingled with flocculi, resembling half boiled membrane. The right cavity of the chest was natural in appearance.

DIGESTIVE SYSTEM.

The stomach of the same subject was in a condition which is often referred to by medical writers, as preventing the operation of medicines. The internal surface was lined with a thick investment of mucus, so tenacious and dense as to appear like an additional coat, and nothing but actual experiment could have convinced me that such a vitiated secretion could be thus fixed on the villous coat. In attempting to remove it, I inverted the stomach, and washed it, first in cold, then in warm, and subsequently with soap and water, but without removing any notable quantity. I next rubbed it between my hands, as if washing a cloth, by which a few flakes were detached, but the greater part

of it still adhered. If this condition of stomach frequently occurs during disease, it must be next to impossible that medicines can be administered with any advantage. There was a considerable quantity of ether mixed with the fluids in the stomach, but even this powerful agent might as well have been placed in contact with dead matter, for any effect it could have produced on a surface coated as this was. The same condition is thought to exist in cynanche trachealis, which frequently renders emetics almost entirely unavailing, unless the most powerful and stimulating are administered. In delicate females habitually costive, and leading sedentary lives, I have several times suspected this state of stomach, which rendered the system almost utterly insensible to the presence of medicines. One instance of this kind, which occurred in the practice of my much esteemed friend, Dr. JOHN W. BUCKLER, of Baltimore, required the most violent emetics at a time when the patient appeared so much prostrated that a slight exertion must destroy her. The emetic, after some very violent efforts, caused the discharge of a thick, lining, mucous substance, resembling an entire coat of the stomach broken into large flakes, and a great improvement in her state of health immediately ensued. The extreme prostration in this case was the consequence of want of nutrition, as the digestive function must have been for some time altogether suspended. It would be of great moment if we could determine with any certainty the condition of system leading to this state of the stomach, which always must indicate the use of emetics, notwithstanding the apparent debility may be truly alarming.

BILIARY SYSTEM.

A male subject, about forty years of age, extremely emaciated, and seemingly dead of consumption, was examined. Both lungs were hepatized, and adherent to the pleura costalis. The diaphragm was permanently and remarkably convex on the right side; slighly so on the left. Other viscera gave no signs of disease. The liver contained a great number of tumours, differing in magnitude, from the

size of a middling apple, to that of a hazelnut; they were whitish, firm, projecting above the surface of the liver, and rather softer in the centre than at the edges. They were readily separable from the liver, and left a clean bed, without shreds or patches of attachment: some of the largest might well be compared in consistence and colour to a rotten apple. It would be very interesting could we ascertain the symptoms accompanying such cases, as well as how far the hepatization of the lungs was dependent on the diseased liver. Nothing remarkable occurred in the cystic or hepatic duct, the gall bladder, or vena porta.

The body of a female, about twenty-five or thirty years of age, was inspected, whose whole system was most perfectly imbued with the colouring matter of the bile. The bones, tendons, ligaments, brain, and in short every part that could be seen, with the exception of the nails and hair, were of a deep, bright yellow, resembling that made with chrome. Contrary to all expectation, there were no biliary calculi; there was no obstruction of the ducts, nor disease of the liver, nor peculiarity in the blood-vessels. The bile in the gall blader was in moderate quantity, though the pori biliarii were rather full. The only remarkable circumstance in this subject besides the colour, was the entire absence of the left *rectus capitis posterior*, while its fellow of the right side arose and was inserted with the most perfect regularity, as regards its relation to the median line; being only a very little broader at its origin.

There is one circumstance not generally attended to by persons engaged in the study of medical jurisprudence, which is that appearance produced on the dead body, very closely resembling the effects of violence committed during life. We frequently find the bones of subjects brought for dissection singularly fractured; sometimes the skull is broken and depressed, or the pelvic junctions separated, with other injuries of similar character. These, if found on a body submitted for medico-legal investi-

gation, would be readily enough attributed to violence done previous to death. Perhaps the best mode of deciding in these cases will be to examine the muscles, which are usually broken in the dead subject at the same time with the bone, and exhibit no effusion of blood, whereas it would be found in quantity, if the injury preceded death. Those who are accustomed to these appearances can distinguish such injuries, though they are not always perfectly easy to determine, except by referring to the circumstances under which the body may have been moved after death. Wherever the cuticle is destroyed, or much compressed, in a dead body, it will in a short time have all the appearance of a very serious injury, done during the life of the subject.

ART. VIII. *An Inquiry into the Medical Topography and Epidemic Fevers of the Valley of Virginia.* BY JAMES W. THOMSON, M. D.

> "The extensive mischiefs inflicted on society by epidemic diseases render their histories the most important and interesting documents of medical record. Invading often without the slightest premonition—embracing in their afflictive range a wide extent of country, or accumulated masses of population—varying in symptoms and characters—and requiring diversified and even opposite modes of treatment in different periods and situations—their causes enveloped in profound mystery, which has baffled the penetration of the most enlightened philosophers—are circumstances that make every observation in relation to them of the greatest utility."
>
> *Chapman: in Med. and Phys. Journ. No. 5.* 1822.

SCARCELY any department of medicine presents a more inviting field in which we may labour with utility and gratification, than the medical topography or physical geography of a country. Connected intimately with the causes of disease, both endemic and epidemic, this province has been more or less cultivated in almost every country of Europe. Much has been done in this respect in Great Britain, France, Italy, and Germany, in pointing out the influence of high and low situations on the human system, combined with the peculiar atmosphere and seasons—vegetable and mineral productions—waters current or stagnant—springs cha-

lybeate or otherwise. But medical topography, I regret to say, has been little attended to in its connexion with the causes of disease in the United States.

Embracing within her boundaries that immense region, between thirty-one and forty-seven degrees of north latitude, and stretching east and west more than twenty-five degrees of longitude, we cannot but expect to find climates as various and diversified as the bold and characteristic features by which she is so eminently distinguished. Taking its rise in Lower Canada and Maine, and traversing nearly the whole extent of country in a south-westerly direction, a range of mountains divides and influences* to a considerable extent the climates of our country. The remark of our celebrated countryman, the late Professor Rush, with regard to the climate of Pennsylvania, "that it is a compound of most of the climates of the world,"† applies with equal or greater force to the country in general, and shows the necessity of a knowledge of its medical topography in determining the causes, and settling the practice, in the more modified or malignant forms of disease. Such results can only be obtained from the faithful records of scientific individuals, scattered over its extensive surface, and in situations favourable to the purpose.

Having premised so much in favour of medical topography in general, I proceed to that part of it which refers more particularly to the subject of this essay, and as connected with the late autumnal epidemics.

That district emphatically called the Valley of Virginia, or Shenandoah, lies between thirty-six and a half and thirty-nine and a half degrees of north latitude, and two and a half, and five and a half degrees of west longitude, from the meridian of Philadelphia. Nature has given it strong and well defined boundaries. On the north and north-east the Potomac—south-east the Blue Ridge—south-west the transverse mountains, which give rise to several

* Caldwell's Oration, Med. Thes. vol. i.

† Medical Inquiries, vol. i. p. 114.

branches of James River—on the north, the mountain after the same name—and on the west, that chain of mountains constituting the great range of the Alleghany.

In prosecuting our subject, I propose to give, in a general manner, (which is all that I can accomplish at present,) the physical aspect of the country—its vegetable and mineral productions—its medicinal and other waters—with a brief account of the epidemic fevers of 1823 and 1824, as they occurred, more especially in the lower part of the Valley, with their peculiarity and modes of treatment.

That this Valley once formed the basin of an immense lake, whose bounds were the mountainous barriers I have pointed out, appears sufficiently evident, from the sublimest physical features, and from the plainest deductions of reason and philosophy.* In the progress of time, its waters undermining an eminence of more than a thousand feet, found a vent through a chasm in the mountain,† and the stream finally mingled with the Atlantic. The Valley, (not a continued plain,) is characterized by hill and dale, with a soil rich and productive, consisting for the most part of a black mould, from some inches to several feet deep, with an argillaceous and calcareous bed. Its principal forest trees are various species of oak, hickory, walnut, and pine, not suffering in comparison with the well grown and lofty timber of some of our western States.

Nearly every department of our materia medica and medical botany might be enriched from the vegetable productions of this district of country. The cassia marilandica and podophyllum peltatum I have frequently seen shaded by the juglans cinerea—the asclepias decumbens, and syricia, eupatorium perfoliatum, spiræa trifoliata, arum triphilium, chimaphyla umbellata, rubus villosus, actæa racemosa, with most of the indigenous medicines introduced into our regular systems of materia medica and medical botany also abound in it.‡

* See Volney's View of America, and Jefferson's Notes on Virginia.

† At Harper's Ferry.

‡ See Chapman's Materia Medica, Barton's Collections, Bigelow's Medical Botany, Coxe's Dispensatory.

The mineralogy of this part of the State, like that of much of our country south and west, has yet to be more fully explored by the votaries of this branch of science. Large beds of transition limestone are discoverable every where on the surface, and may be traced sometimes for miles in veins beneath it, running in lines parallel with the range of mountains on either side, and with angles more or less inclined to them. Beds of this calcareous deposition have frequently been known to retard the progress of the well-digger at the depth of a hundred and fifty, and two hundred feet. When broken, it exhibits for the most part a greyish blue, frequently streaked by white lines passing in different directions through it. As it forms the great substratum of this region, it is clear that our spring and well waters become altered with it, by contact and infiltration, as will be more particularly shown hereafter. Though on the more hilly lands, common quartz, and different species of agate are found, the carbonate of lime, or common limestone, may be considered as forming the great geological characteristic of northern and western Virginia.

The waters of our springs and wells every where hold the carbonate of lime in solution, which may easily be detected on evaporating a given quantity by boiling in any vessel—the lime will be found adhering to the sides and bottom, as is always the case in teakettles, and other culinary utensils.

Mineral springs are numerous, and a correct history and analysis of them would afford instructive and useful information. Hepatic waters are by far the most numerous, and a half dozen or more of such springs are resorted to in the neighbourhood of Winchester, Martinsburg, and Charlestown from six to twelve miles from these places. The most important, however, of medicinal springs in the Valley is the one discovered in 1819, and now known by the name of *Shannondale*. It is situated on the east side of the Shenandoah River, four miles from Charlestown, Jeffer-

son county, and ten or twelve from Harper's Ferry. Its waters are tonic and laxative. In bilious cases, where artificial evacuations have been premised, these waters have proved highly beneficial—correcting debility by imparting a vigorous tone to the stomach, whose sympathetic influence is speedily felt throughout the system. This account is fully corroborated by an intelligent gentleman of Annapolis, who informed me that his health had been much impaired by frequent attacks of bilious fever. He was so much debilitated and reduced by this fever in the summer of 1822, that on his way in a carriage to this spring he had to make frequent delays on the road—and when he arrived at Fredericktown, rather more than half way, he was so much exhausted, that it was impossible for him to proceed for some days. Having arrived at Shannondale, and used its waters freely, he found the most manifest improvement in his health, and in a few weeks was permanently restored to his usual strength—attributing his speedy convalescence to the use of the waters alone. To Dr. SAMUEL J. CRAMER, of Charlestown, the praise of first giving publicity to this spring is due, and to him belongs the credit of bringing into notice and extensive usefulness this now fashionable resort. It is to his kindness I am indebted for a correct analysis made of this water by Dr. DE BUTTS, of Baltimore—and also for cases which came under his own observation, wherein the use of it was of the most unequivocal benefit. The analysis of Dr. De Butts is as follows:

Sulphate of lime,	63.
Carbonate of lime,	10.5
Sulphate of magnesia,	23.5
Muriate of magnesia,	1.
Muriate of soda,	1.
Sulphate of iron,	0.3
Carbonate of iron,	0.7*

The temperature of the water is fifty-five degrees of Fah-

* Gaseous contents, sulphureted hydrogen and carbonic acid.

renheit and eleven of Reaumur. About thirty grains of solid contents are deposited by evaporating a pint of the water. "When moderately used," says Dr. Cramer," it is a most bland and gentle laxative, though in large quantities it is as powerful in its operation as any of the neutral salts." It is also a diuretic, diaphoretic, and tonic. As a gentle laxative, Dr. Cramer has found very decided advantage from it in bilious accumulation, hepatic derangements, hemorrhoids, and in the last stage of dysentery: as a diuretic, highly serviceable in defective secretion of urine, and also in calculous affections—several gentlemen, having passed calculi whilst using it, had all the distressing symptoms of this complaint removed or mitigated. He records a case of a dropsical patient of his own, with whom a mercurial course, squills, digitalis, &c. failed to effect a cure, when the Shannondale water, drunk to the extent of a gallon or more a day, for eight or ten days, entirely removed the disease.

The highest claim which this lately discovered spring has on the attention of the profession and the public in general is, that scarcely a dyspeptic patient has been known to visit it, without deriving unequivocal advantage. The testimony of others as regards its happy effects in this too common and distressing complaint, I can corroborate. Whilst at this spring the past summer, a young lady from Baltimore arrived there, with all the symptoms of this affection, so bad, indeed, that the stomach rejected almost every thing taken. By a judicious use of the water, diet, and exercise, in eight or ten days, she was much relieved—and continuing the same treatment for twelve or fifteen days longer, she left the spring perfectly well. On my way through Baltimore to Philadelphia, I saw the lady, who mentioned that she had suffered but a partial return of the complaint, and attributed her recovery to the use of the Shannondale waters. Facts of the kind speak volumes in favour of a watering place, and require only to be generally known, to be extensively useful. Dr. Cramer has found benefit

from this water in amenorrhœa, and chronic rheumatism: in cutaneous affections it has not been sufficiently tried to warrant me in saying much about it. But it is worthy of remark, that the attention of the intelligent gentleman, whose name we have so often mentioned, was first called to this spring by the perfect cure of a case of tinea capitis by frequent bathing the head in the water, and applying to it the mud from the bottom of the spring.*

* For the gratification of those who feel an interest in this watering place, I subjoin the following notice of it by Mr. James Stephenson, M. C. late proprietor.

"The Shannondale Springs take their rise in a bottom, extending for more than a mile in length, and between two and three hundred yards wide, situated on the eastern side of the river Shenandoah, skirted on one side by this romantic river, and bounded on the other by a chain of beautiful hills, which, as they approach the Blue Ridge, present to the eye of taste some of the most interesting scenes. This charming Valley can boast of as many beauties as are to be found in a country every where characterized by pictureque scenery.

"The effect of the landscape is also greatly heightened by the very attractive appearance of the river, which here exhibits a noble sheet of water, flowing in an uninterrupted course for more than a mile, and terminated by a cascade; a most striking object, when seen from the hill on which the boarding-house stands. Its banks, too, are delightfully shaded with the most majestic sycamore, elm, and sugar-maple trees, and the principal spring is very happily shielded from the sun's rays by several large trees of the same description, which make an arbour at once the most beautiful and umbrageous.

"The elegance of the outline of the opposite hills, together with the grander features of the mountain prospects in the distance, and the romantic confusion with which immense rocks, covered with evergreens, hang on each side of the Shenandoah, give to the whole scene a degree of magnificence rarely witnessed.

"The spring most generally used, (on account of it medicinal powers,) has all the distinguishing qualities of a mountain stream—transparency, purity, and coldness; in its sensible properties and effects, it bears a close resemblance to the celebrated Bedford mineral water.

"The roads on both sides of this place are very good, especially on the western, and afford invalids every opportunity for exercise, either in carriages or on horseback. They are generally well shaded, and as they run through the most beautiful and fertile part of this country, excite in the mind of the traveller the most pleasing emotions. To the lovers of water

Next I am to give a brief detail of the epidemic fevers which have afflicted the Valley for two successive seasons.

Fanned as it is in every direction by salubrious breezes from the surrounding heights, we learn from the oldest inhabitants, that intermittent and remittent fevers have seldom occurred here epidemically. But as the general prevalence and violence of the diseases during the last two summers and autumns, have obtained for the latter the title of "calamitous seasons," it certainly imposes on the practitioners of the afflicted districts, as an imperative duty, the task of studying the origin, character, and treatment of them, and not to permit them to pass away without some record.

Rejecting the many and opposite opinions entertained with regard to the *cause* of epidemics, and especially in our own country, I refer with great satisfaction, to some recent disquisitions on this subject in a former Number,* as containing the most sound and philosophical views on the "Causes, Phenomena, and Laws of Epidemics," I have any where met with—and as fully explanatory of the production of those which I am about to describe. It is there

---

amusements, the river will furnish ample opportunities for indulgence; it is well supplied with fish, and affords abundant room for exercising in rowing, &c. These springs are seventy miles from Baltimore, fifty-eight from Washington, sixty from Alexendria, nineteen from Leesburg, twenty-two from Winchester, forty-five from Bath, and thirteen from Gen. Jukes's sulphur spring, on the road to Bath; Harper's Ferry, too, admired by all travellers for the grandeur of its scenery, lies within ten miles of this place."

In the digging and cleaning out of this spring, it may be interesting to know, that a large quantity of hexagonal crystals of sulphate of lime was found between the surface and a depth of three or four feet, some detached and small specimens of which I have presented to the mineralogical cabinet of the University of Pennsylvania—but by far the most beautiful and perfect specimens are now in the possession of Dr. Samuel J. Cramer, of Charlestown, Jefferson county, Virginia: they consist of two separate masses, with irregular nuclei, from which those hexagonal prisms shoot in every direction downward, being from ten to fifteen or more inches in length.

* Med. and Phys. Journ. No. 16.

mentioned that the cause arises from certain changes which take place in the atmosphere, not cognisable to the senses, produced by heat and moisture evolving noxious exhalations, from the decomposition of vegetable matter principally—that these exhalations partake of the nature of the soil, temperature, and seasons in which they are generated—and though the same cause may sometimes produce different effects, as intermittents, cholera morbus, dysentery, &c. it is owing to peculiar predispositions and idiosyncrasies of different systems.

As the preceding season or year is commonly supposed to have some relation or bearing on an epidemic occurring in a following season, it is proper to remark, that the summer and fall of 1822 were distinguished by no one prevailing disease—intermittents were confined to the vicinity of watercourses and low grounds—dysentery and cholera, though common, were slight. The winter was remarkable for little snow, and variableness of weather—and in the spring which preceded the season of the disease, there was more rain and moisture than had been known for the last nineteen years. The weather continued so cool through the months of March, April, May, and June, that fires were necessary to comfort both in the morning and evening. The repeated showers of rain every two or three days, together with the heavy dews of night, gave to vegetation of every description, a luxuriance of growth seldom seen. This course of things remained much the same until about the middle of July, and though the mornings and evenings were cool for the season, during the middle of the day the heat was often excessive, the mercury varying between seventy-five and eighty degrees of Fahrenheit, until four or five o'clock in the afternoon, when a south-westerly breeze imparted a refreshing coolness to the air.

The fever of 1823 made its first appearance on an estate on the Shenandoah river, exposed to the prevailing winds of the season, and having a large mill-race, over which those winds passed. Between the 13th of July and the

1st of August, nearly every person on this estate was taken sick. Children were the first subjects of attack, and afterwards adults. The symptoms were a dullness of feeling—drowsiness—stretching—and chilliness—followed by fever—pain in the head, limbs, and lumbar region. From the 1st to the 10th of August there fell much rain—the mornings and evenings were cool and damp, and the heat of the middle of the day often eighty degrees of Fahrenheit. New cases of fever multiplied under those circumstances, and were not confined to the district of country bordering on the Shenandoah.

The general subjects of attack up to this date were among the poorer orders of white people and negroes, whose humble habitations and modes of life rendered them peculiarly liable to the disease. The section of country lying between parallel lines drawn from the Shenandoah river to Opequon creek, between Berryville and Millwood on the one hand, and Charlestown and Brucetown on the other, was now extremely sickly, within which parallels are the extensive marshes and low grounds called "Neil's dry Marsh," and "Long Marsh." For the topography of Brucetown, I refer to the sensible and well written essay of Dr. John E. Cooke.* Both Neil's and Long Marsh lie to the east of Opequon creek, between this creek and Berryville. They approach each other within three miles, and doubtless miasmatic effluvia may be borne this distance, as independently of other evidence, all who sickened between the two had similar symptoms to those residing on their margins. On the 14th, 15th, 20th, and 21st of August, we had heavy rains, and hot and sultry weather—new cases increased rapidly, attended with great torpor, and constipation of the bowels—requiring double and treble doses of cathartic medicine to produce the effect usually obtained from a single dose. A determination to the bowels and head was not now uncommon, producing dysenteric affections in some, and hydrocephalus internus in others. Those forms of the

* Med. Recorder, vol. vii. No. 27.

disease existed more among children, and especially negro children, whose cases had been somewhat neglected. The prevailing winds were from the south-west. No rain fell from the 21st of August to the 6th of September, the mercury during the middle of the day, for several days in succession, standing at eighty degrees of Fahrenheit. From the 8th of September to the 1st of October rainy, damp, and disagreeable weather prevailed. All cases now assumed more distinctly the intermittent type, and became more manageable. Among adults, especially when many were confined together, there was a great tendency in this fever to glide into the typhoid state. In this event, a spontaneous mucogelatinous diarrhœa supervening, attended by a sanguineous watery discharge from the nostrils, denoted speedy dissolution. During the month of October, the fever began to abate, and ceased generally with the frosts of November. The white and black population were equally susceptible to the epidemic of 1823. Though generally of the intermittent type, assuming the quotidian first, then the tertian, yet with the sanguineous and plethoric, it was usually a remittent fever, until compelled by depletory measures to assume the form I have mentioned as the most common. Of a pain in the head and back, there was much complaint—the stomach, for the most part, was very irritable, throwing off a yellowish bile—the tongue was foul—urine scanty and high coloured—skin hot and dry—the pulse full and hurried in the exacerbation—and the bowels obstinately constipated. Relapses were frequent during the winter and spring on the slightest exposure, and, in some instances, throughout the succeeding season.

Concerning the peculiarities of this epidemic, I remarked the following:

1st. The powerful influence it exercised over other diseases incident to the autumnal and summer months, causing them to "assume its livery," thus verifying the observations of Sydenham, who abounds in proofs of the dominion of febrile diseases over each other—of Rush, who says, " the bilious remittent fever which occurred in Philadelphia, in

1780 chased away every other febrile disease"—and which are to be frequently met with in the excellent writings of Cleghorne, Lind, and Clarke.

2d. From peculiarity of situation, a modification in the same disease often took place. Those, for instance, inhaling effluvia from marshes and filthy ponds, where the decomposition of vegetable matter was continually going on, contracted a disease more stubborn, debilitating, and of longer continuance, and after a certain time more disposed to assume the typhoid type, than in such whose residences were on heights remote from stagnant water, the atmosphere of which was only charged with the gaseous effluvia given out from weeds, trees, and extensive fields of corn sometimes surrounding their habitations.

3d. The great difficulty in healing the excoriations produced by blistering with cantharides—six and seven weeks being inadequate to the purpose in many cases.

4th. The extraordinary susceptibility of the glandular system to mercury, a single purge of calomel frequently exciting profuse ptyalism.

This brings me to the consideration of the fever of 1824. The remainder of the fall and winter of 1823–4, was not noted for any epidemic influence. The inflammatory attacks of winter were mild, and the spring and summer months, up to the end of July, were quite similar to those of the preceding year, with the same luxuriance of vegetation of every description. But from the 1st of August to the middle of October there was little or no rain, and owing to this drought and heat, the crops dependent on the rains of August and September were very much stinted and curtailed. The fever commenced about the 1st of August, and increased rapidly until the 1st of October. After this it decreased and ceased altogether by November.

The symptoms were rather different, more severe and alarming, than those of the preceding year. Avoiding for the most part, such as had been afflicted by the previous epidemic, it seized upon persons of sanguineous temperament, and was usually introduced by chilliness, succeeded

by a raging fever, with pain in the head, breast and limbs, accompanied by great gastric distress and irritability—a burning heat and dryness in the pit of the stomach, which in some extended to the throat and fauces. Its type was remittent, and those remissions of short duration. The functions of some of the most important organs of the animal economy, secretory or excretory, were greatly impaired—the liver secreting a superabundance of acrid bile, and the kidneys a deficiency of urine. The skin became hot and dry, the tongue loaded with a brownish sordes, the pulse full and hurried, the eyes red and heavy, and the face flushed. The bowels were sluggish and constipated, and when moved, black and tar-like evacuations were procured. Though such was the character of the fever for the first few days, it soon changed its symptoms—and from being evidently inflammatory, and demanding evacuating and depletory measures, would hastily require the most powerful stimuli to be alternately employed. A low and languid pulse, feeble voice and ice-cold extremities, with suffusion of bile under the skin and eyes, with a cold cadaverous sweat, vomiting of dark coloured matter, having the *coffee-ground appearance*, were the precursors of death in many instances. Whilst some of our larger towns, such as Winchester, Charlestown, Harper's Ferry and Shepherdstown in a great measure escaped this epidemic, many of the smaller ones suffered severely. Among these, were Berryville and Millwood, lying between the parallels I have already pointed out. Berryville is situated midway between the Shenandoah river and Opequon creek, in rather a low and level country. A large spring rises about the middle of the town, and skirts along its southern boundary. Not finding a drain below the town, it overflows to some distance, and finally sinks into the earth. This ground was during the drought exposed to the rays of the sun, and large fissures or cracks were to be traced in every direction through the external crust. The water near the town was dammed up, and having a southerly exposure, the inhabitants experienced all the effects of the prevailing fever. The instru-

mentality of this spring in causing sickness here, was particularly striking. Twenty or thirty masons and carpenters were engaged in building a dwelling and store-house immediately at the head of this low ground, exposed to the exhalations wafted to them by the prevailing currents of air. Every one sickened sooner or later, according to their degrees of susceptibility, and likewise other labourers who supplied their places. Millwood is a small town eight miles to the south of Berryville, and three miles distant from the Shenandoah river, and, for its population, suffered extremely. But here also, there was a prolific source of disease, consisting in a large stream of water running directly through it, which supplies a mill in the centre of the town, and by means of a dam a quarter of a mile in extent below and a little to the south of it, furnishes another mill with water. In this town several deaths occurred, attended with those symptoms of the low malignant fever I have mentioned. The country between Berryville and Opequon creek, in the neighbourhood of Neil's and Long Marsh, suffered very much—on the latter marsh the disease was quite fatal. The dry tracts of limestone country in the valley were greatly afflicted from the same cause. Dependent upon ponds for watering cattle, these are numerous, and during the drought, their surfaces are exposed to the heat of the sun. As another cause, may be mentioned the decay of immense quantities of clover hay spoiled by the rains of July, and suffered to rot on the fields, some of which, alone, contained seventy-five acres. The fever of this and last year was often fatal to women advanced in pregnancy, particularly between the fifth and seventh months. We may date its decline from about the first of October, assuming in its declension the common intermittent form, of the tertian type.

Among the peculiarities of the epidemic of this year, we think the following may be stated:—

1st. That it generally passed by those who had suffered the preceding season, and particularly such as had relapses in the spring, and were subjected to medical treatment.

2d. That negroes, who were equally susceptible last year, escaped this, or had only ordinary intermittent fever.

3d. That the disease in many instances commenced with convulsions, where evacuations had been neglected, in the robust adult, as well as the tender infant.

4th. That from the stomach of three or four patients, a peculiar pale red or rose coloured fluid was ejected, mixed with some detached pieces of matter, resembling the washings of beef, or abrasions of the villous covering of the stomach.

5th. That the hot stage frequently preceded the cold by an hour, and this going off would be followed by a violent fever.

6th. That an involuntary spasmodic jerking, very similar to chorea sancti viti, preceded and accompanied the cold stage in a number of instances, and attended convalescence in two other cases.*

As I have already transcended the limits assigned to this essay, my account of the treatment of the disease must necessarily be succinct. Considering the two epidemics as generated by the same cause, and requiring the same management with certain modifications, no apology is necessary for giving in one view the practice of the different years of 1823 and 1824. It will be seen by referring to the history of the fever of 1823, that it ought to be denominated a Bilious Intermittent, as this was the type it most generally assumed. Those medicines were indicated for its cure which most effectually evacuate the alimentary canal, consisting of emetics and cathartics—sometimes a preference was given to one alone, at others, both were called to our aid, as I shall presently show. The treatment in the first place of an intermittent naturally divides itself according to the stages of the disease. When called to a patient in this fever, if the stomach was not extremely disordered and irritable, an emetic of tart. antimony, or ipecacuan and antimony combined, generally relieved the distressing symptoms, and

* To these observations I may add, that among eight or nine notorious drunkards, I had an opportunity of seeing during both sickly seasons, not one of them was affected by the fever.

paved the way for the more advantageous use of cathartics. But where there was great gastric distress, a pill of calomel at night, of ten or twelve grains, and worked off by twenty-five or thirty grains of jalap, or an ounce of sulphate of magnesia in the morning, produced the happiest effects—large, black and fœtid stools being thrown off. The cold stage was managed by warm drinks, laudanum, and hot applications to the extremities, which, however, were of little avail until the alimentary canal was well evacuated. In the hot or febrile stage, bleeding was resorted to when the pulse was full and throbbing, and there was any determination to the head. The quantity of blood taken depended on the ability of the patient to bear it. Diaphoretics, such as James's powder, various preparations of nitre and antimony, brought about a more speedy termination of the exacerbation. Yet evacuations were persevered in as long as the stools continued black and offensive, which was often the case for some days. These becoming less so, and more natural in appearance, and the pulse more equable, were favourable omens, and pointed out the time when tonic medicines might be prescribed with great probability of making a counter-impression to the morbid one existing in the system. They, however, would frequently fail, and the only alternative was, to combine the evacuating and tonic plan, and for the most part with the happiest results. Cinchona, when it could be procured genuine, was decidedly the most powerful of the tonic remedies in arresting the progress of the disease. But generally the bark was so adulterated, that little confidence could be reposed in it alone. From ʒj to ʒiij, however, taken in a wine-glassful of the infusion of quassia every two hours during the apyrexia, would mostly prevent the paroxysm. The sulphate of quinine administered in the proportion of half a grain to a wine-glass of the quassia infusion, appeared to have its powers greatly increased.

Fowler's solution sometimes succeeded, after these medicines had been tried for weeks in vain, especially in the obstinate cases of children. By a medical gentleman I was

informed, that in some of the most obstinate cases of tertian he met with, and which had resisted the most powerful tonics, that the arsenical solution, in doses of fifteen or twenty drops, instead of eight or ten, as usually exhibited, never failed in his hands to effect a cure, and this without any of those disagreeable symptoms to be apprehended from its increased quantity: this practice deserves attention. In my opinion, this medicine deserves to be alternated with the articles I have mentioned, as I witnessed the happiest effects from so doing. Given to the extent of a grain and a half or two grains before the expected paroxysm, opium did much good, and in many cases averted it. The indigenous eupatorium perfoliatum cut short this complaint to my own knowledge, in more than a hundred instances, where it was administered to the negroes on large estates—many farmers effecting cures with it, when the regular practitioner of medicine had failed with the more elegant preparations of the shops. Having the support of Doctor CHAPMAN, and so well recommending itself—being emetic, cathartic, diaphoretic and tonic, it is not a little astonishing that country physicians in particular, have not availed themselves of all its virtues, so necessary in the different stages of intermittent and remittent fevers. By not noticing the serpentaria, columbo, gentian and other tonics, I do not mean to imply that they were not used—all claimed a place as adjuvants, and some of them of no inferior order. We may here remark, that after free evacuations, the spt. terebin. in the dose of a table-spoonful taken an hour before the expected chill, in a number of instances warded it off, and merits a more extensive trial.

The fever of 1824 required greater vigilance, and whilst it exacted in the beginning the use of the lancet and the "Herculean cathartics" with "a liberal hand," it would suddenly change its symptoms and call for stimuli internally of the most generous kind, with the application of epispastics and sinapisms. With all these auxiliaries, even the attentive and devoted physician had sometimes to yield to his more

potent antagonist, and view his patient sinking in the arms of death, who had, a few days before, enjoyed all the vigour of health. By some, fearing salivation, mercury was neglected, and gamboge, aloes and the neutral salts were substituted, though with little success. Gamboge, indeed, invariably did harm, by inducing an artificial cholera morbus, not easy to appease, which evidently injured the patient. Highly recommended as it is, in Dr. Cooke's Essay, to which I have alluded, as a substitute for calomel, aloes was not generally adopted as such. Mercury was rarely given to produce salivation, yet when it salivated, none of those alarming effects occurred, dreaded by some. On the contrary, in almost every case, where it did happen, I saw the best results from it, and to its supplanting the morbid action in the system by the substitution of its own, I ascribed the preservation of several important lives. Commonly it was only necessary to use it as a cathartic, and not as a sialagogue. To attack our bilious fevers with any other purgative to the prejudice of calomel, and this until, indeed, we had experienced all its advantages, was not the general practice among us. Nor was Dr. Cooke's plan, of confiding in purgatives alone, to the exclusion of tonics, more generally adopted. I suspect little other testimony than his own, which, however, is highly respectable, could be adduced in support of it.

Hepatic derangement, a frequent consequence of those fevers, was easily overcome by introducing mercury into the system, so as gently to touch the gums, and to keep the bowels moderately open. This was best done, by administering, at bed time, a few grains of the blue pill—to be discontinued and resumed so as to keep up the desired effect. Ascites and anasarca, though common sequelæ, were easily managed by the same treatment, combined with the use of diuretics.

In concluding, I have only to express my regret, at the imperfections of this essay. But the subject is interesting, and defectively as it is treated, the facts and observa-

tions, which I have presented, may not be without value, as furnishing data to some future and more able historian of our epidemics.*

* In estimating the value of this essay, we differ entirely from its author. It appears to us an important document, abounding in curious and instructive matters, well digested, in a style neat and appropriate, and as the production of a very young practitioner, entitled to much commendation. To us no communications are more acceptable than those relating to the subject of his paper, and our pages will always be open to the publication of such disquisitions. With our thanks for his present favour, we cordially invite him to become a regular correspondent of this Journal.

EDITOR.

CASES.

ART. IX. *Case of injured Ulna, successfully amputated.* By ROBERT B. BUTT, M. D. of Portsmouth, Virginia.

A STOUT, healthy young man, about twenty-five years of age, two or three years previous to the time of the operation, received a wound, which was inflicted by a knife, upon the wrist joint, near the styloid process of the ulna, probably extending through the capsular ligament. The patient experienced but little inconvenience for several days, but the wound seemed not disposed to heal, and began to inflame around the margin, and the inflammation gradually extended over the whole forearm, as high as the elbow, with considerable pain and tumefaction.

Some time after, a fluctuation of matter was discovered about midway the ulna, which was discharged through an opening made with the lancet. This orifice also continued to discharge for some time, without any diminution of the inflammation and tumefaction; the limb now being swollen to more than twice its natural size. At length this opening was closed by a thin pellicle, and fresh accumulations, in different parts of the bone, were successively let out as before, the sores remaining open and fistulous.

It was now evident that the bone was carious and denuded in some places. This state of things continued for twelve or eighteen months, the patient at different times being in the hands of several regular practitioners, as well as empirics and old women.

The above short history of the case I received in substance from one of the gentlemen who had been consulted.

Two years or more after the accident the patient was

brought to me. Upon examination with the probe, I discovered that the bone was not only carious in several places, but that there were openings extending to the cavity, admitting the probe obliquely, in some directions, almost its whole length. The discharge was sometimes a bloody sanies, and at others a thin, yellow, aqueous fluid, resembling the discharge from scrofulous sores, with the exception of the carious flocculi, which in scrofula I do not remember to have seen; but on withdrawing the probe, when it had been introduced into the cavity of the bone, intermixed with the usual discharge, small globules of oil profusely followed, which I took to be the marrow partially dissolved, by the diseased action going on in the interior as well as on the exterior of the bone.

I considered the disease necrosis. The bone is more than twice its natural diameter, independent of the periosteum, which was at least half an inch in thickness, and of the consistence of cartilage.

I am not disposed to enter into any speculations as to the probable causes of the disease, as the patient seemed perfectly free from any strumous diathesis, or syphilitic taint, which might have been excited into action by that or some unknown cause. But it is difficult to account for the violent and extensive inflammation in the bone from such an injury, unless there had been some strange constitutional predisposition or idiosyncrasy.

It was now obvious to any medical man, that the disease was incurable, except by an operation, and amputation was determined upon as the only alternative—which, being made known to the patient, he positively and obstinately opposed: having boasted of his former uncommon strength, he said that he would rather die than be deprived of one of his hands. But if any operation could be devised whereby the hand might be saved, that he would cheerfully submit to any torture, and even increased hazard of his life, provided it afforded a tolerable probability of saving the limb.

A consultation upon the case was again held by several of the most respectable practitioners of this place, when my

aged and revered friend and preceptor,* (now no more!) who deserves all the credit of the operation, if any be due, stated it as his opinion, that it was practicable to extirpate the diseased bone, separate it from the sound, and ultimately save the hand. This amputation was not without its difficulties: the patient, however, being made acquainted with the nature of it, and with the increased and protracted pain that he would have to endure, the hazard from inflammation, and probably extensive suppuration from so large a surface, resolutely submitted to the operation.

The principal danger which we expected to encounter was from hemorrhage, but that was thought of little moment, when we had the whole under our control by the tourniquet, and in case we found the operation more perplexing than we had anticipated, we could but complete it by the amputation of the arm, which would have been easily accomplished, as the transverse incision was sufficiently below the joint.

The operation was commenced in the following manner: the patient was seated in a chair, and the tourniquet applied on the arm as usual. A transverse incision was made about four inches and a half below the olecranon, and extending to a little more than half the diameter of the arm, down to the bone; next a longitudinal one, intersecting the lower part of this cut, and in the direction of the most superficial part of the bone, extending to the wrist joint. The operation being thus far completed, the next step was to dissect around the bone with the scalpel, commencing at the transverse incision, and continuing it two or three inches lower, until a common spatula or bolus knife was insinuated beneath the bone, to prevent the soft parts being injured where the saw was to be applied; the bone was then severed with ease.

Next the dissection was continued as before along the whole course of the bone, down to the joint, and as far

* Dr. Joseph Harding, distinguished for his skill and ability as an operative surgeon, and who would have done honour to any place and country, if accident had placed him in a more conspicuous situation.

around as possible. To complete the dissection with more facility, a piece of twine was passed over the end of the denuded bone, which enabled an assistant to elevate it from its bed, and thus the entire bone was removed.

The wound was then sponged and cleaned of coagulum, the tourniquet slackened, and the ulnar and interosseous arteries taken up without any difficulty; the edges of the longitudinal incision were now brought together, and confined by strips of adhesive plaster; and those of the transverse by the needle; after which, the dressings were applied, and a roller, moderately tight, over the whole; fifty drops of laudanum were then administered, and the patient put to bed. On the fourth or fifth day, the dressings were removed, when the sore exhibited a healthy appearance, which it continued to do, and in five weeks completely cicatrized, and he was discharged cured.

The limb, which for two or three years had been a source of pain and anxiety, and totally useless, was now, if not completely restored to its wonted strength and usefulness, at least, so far recovered in two or three months as to enable him to pursue his usual avocation, that of house joiner; flexion, extension, and rotation of the joint being as free and uninterrupted as it ever was.

The strength and usefulness of the hand and arm are so little impaired, that he has for the last two or three years performed the most laborious work with both his hands, as if he had never suffered an injury; and he, in fact, says, that he has as much strength in that hand (it being the left) as most people ever have in the right.

Sketch of the Portion removed.

ART. X. *Case of Effusion into the Chest, in which Paracentesis was performed.* By SAMUEL JACKSON, M. D. one of the Physicians to the Philadelphia Almshouse Infirmary.

THE operation for empyema, or paracentesis, is seldom resorted to in this country, or England, for the relief of morbid effusions into the chest. Though of greater frequency on the continent of Europe, yet, in comparison with the practice of former periods, it appears to be falling into disusage. The nature of those effusions, and their causes, are widely different. The operation is not calculated to afford equal benefit in all cases, in which they exist, while, in many, it is wholly useless. From a recurrence to it without discrimination, it has, no doubt, often proved of no service, and may have been sometimes of disadvantage; and, in consequence, the benefits that may be obtained from the opposite performance of this operation, have been too much underrated. Many striking instances of unequivocal relief, and some complete cures in desperate cases, are on record, as having been obtained by this means; nor, can it be questioned, that employed with judgment, it will seldom fail to afford relief from distressing symptoms, will often protract life, and, sometimes, prove auxiliary to the completion of a perfect cure. The operation itself is simple, unattended with much hazard, being but little more formidable than the opening of a large abscess, and, when an effusion into the chest is clearly indicated, may, with perfect propriety, be performed, merely with a view to alleviate the distress and suffering of the patient, even when it holds out no expectation of an ultimate recovery. The only point of real difficulty, is to determine with absolute certitude, the existence of effusion into the thorax. The general symptoms cannot be relied on—they are common to other affections of the thoracic viscera, and sometimes are sympathetically excited by diseases of some of the abdominal organs. So completely are the general symptoms of effusion into the chest, occasionally produced by this last cause, as to have led to the performance of the operation for empyema. A remarkable and instructive case of

this kind, is related by Dr. WIDEMAYER, in his Medico-Chirurgical Observations, published in one of the German Journals, for 1824. The symptoms so completely simulated hydrothorax, that the Doctor, and another surgeon, were induced to perform the operation. No discharge was obtained, but the lung presented itself at the incision. On examination after death, the disease was found to have been acute hepatitis, while the viscera of the thorax were in a healthy condition.

The difficulty of recognising the existence of fluids, in the thorax, is much lessened, if not altogether obviated, by the application of percussion, first devised by Avenbrugger, and of auscultation, either immediate, or mediate, as performed with the stethoscope of Laennec. The adoption of these measures, with other auxiliary means, taken in connexion with the general symptoms, furnish indications, so positive and certain, that mistakes appear to me nearly impossible, as it respects effusions into the cavity of the thorax.

The following case, which illustrates the palliative benefits to be derived from the operation of empyema, or paracentesis thoracis, and the diagnostic means of determining the condition of the thoracic cavity, may be thought of sufficient interest to your readers to justify its publication.

In August last, I was applied to, at my office, by a negro servant of Mr. C——, a valuable domestic, on account of a severe cough, attended with fever. By an examination, I ascertained he was labouring under inflammation of the right lung, the left being unaffected. Bleeding, cupping, and blistering the right side of the thorax, saline diaphoretics, and antiphlogistic regimen, in a few days, subdued the severity of the attack. Although the cough was considerably abated, it did not entirely disappear, but, being anxious to attend to his duties, Jerry neglected his complaint, and was occupied in his usual employments, until the middle of October. At this time, from exposure, by working in the open air, on a cool, damp day, with his upper garments thrown off, he was again attacked with pneumonitis (in the same lung,) of considerable intensity. He was treated actively; ℥ lx. of blood were taken from

the 24th to the 29th October, besides cupping, &c. The room in which Jerry slept, was without a fire-place, the weather was chilly, and being restless, he was often uncovered. This, probably, brought on an attack of pleurisy on the left side, which displayed itself on the morning of the 30th, as the pneumonic symptoms were beginning to yield.

Examination by percussion, showed the lower portion of the thorax, on the left side, to want resonance; it returned a very flat, dull sound, like solid flesh. Above the fourth rib, it was unnaturally resonant—it sounded as though perfectly hollow. With the stethoscope, the total absence of respiration in the left lung was determined, not only in front, but under the axilla, and between the scapula and spine, except very high up, where it was indistinct. I could not discover hægophonism, but metallic tinkling, or a sound resembling that produced by striking a deep silver, or glass vase, was very perceptible. These signs were satisfactory evidence, that an effusion, both of liquid and air, had already taken place into the sac of the left pleura. From the absence of any loud sibilant rattle, I was satisfied, the air was not derived from a communication with the lungs, and that the effusion did not consist of pus, proceeding from an abscess that had ruptured in the lungs, but was serum, the result of acute inflammation of the pleura.

It is not essential to detail the treatment, which was that usually pursued in pneumonia, and pleurisy. Altogether ℥ cxxv. of blood were abstracted from the arm, and cups were four times applied to the chest; together with blisters, and hot poultices.

On the 10th November, all the acute symptoms had disappeared—a very free and copious expectoration of a thick and viscid mucus had been established for some days—the respiration was unembarrassed—the skin soft and moist—the general feelings comfortable. An exploration of the chest, presented no alteration in the state of the left side, except that the metallic tinkling had disappeared. In the right lung, a mucus and slight crepitous rattle still existed.

A gradual amendment was evident, in the general state of the patient, for some days. The cough, however, continued, though considerably abated in violence.

Towards the end of November, œdema occurred, together with hurried respiration and breathlessness, on ascending the stairs. On the 29th, I instituted another exploration into the state of the thorax, and ascertained the following symptoms. At rest, the respiration was natural, but laborious and oppressive on motion—cough not very troublesome, loose, and expectoration free—decubitus perfectly easy, on either side—œdema of left hand and foot—above the fourth rib, on the left side, the chest yielded on percussion, a resonance unnaturally clear and loud—below the fourth rib, unnaturally flat and dead—on the right side, the resonance was natural, though chiller, in the upper part, than in the corresponding portion of the left, and clearer in the lower, than in the same region of the opposite side. Examined with the stethoscope, the murmur of respiration was heard in every part of the right lung, louder than natural, and with a faint crepitous rattle—in the left lung, no respiration could be discerned, in any part. From these evidences, no doubt would be entertained, but that pneumothorax, or an effusion of air, and a serous effusion, existed in the left side, the effects of inflammation of the pleura, which had become chronic, together with irritation, or chronic inflammation of the right lung. To give greater certainty to the diagnosis, the chest was measured, and the left side ascertained to be an inch and a half larger than the right side. Succussion was also performed, when the splash of a liquid in the chest was to be distinctly heard, even at the distance of a foot or two from the patient. The sound, and motion, were both very evident to the patient himself. This last phenomenon, when it occurs, is the most unequivocal mark of effusion in the thorax, but it is not present in all cases. It is only to be met with when an effusion of air, as well as serous fluid, has conjointly taken place.

The uniform fatality of chronic pleurisy, demonstrates the inefficiency of the treatment, by general remedies, and

their perfect impotency to procure an absorption of the morbid secretions, that result from inflammation of the pleura. The only chance of a recovery for my patient, appeared to me, to be the operation, which, by removing the effusion, would obviate the more immediate and pressing danger, and give an opportunity to attack the disease of the pleura, with a greater prospect of success.

Consent having been obtained for the operation, I proposed to Mr. G——, the removal of my patient to the Almshouse Infirmary, where it could be performed with greater convenience. I was also desirous to present the case, as possessing considerable interest, to the class attending the clinical lectures.

This arrangement being agreed upon, Jerry entered the Infirmary, December 5th. Doctors CHAPMAN and GIBSON, on an examination, confirmed the previous diagnosis. It was determined to try, for a few days, what effects a course of hydragogue purgatives would produce on the effusion, and pills of elatin were ordered, morning and night. Copious discharges were obtained from the bowels, but no impression was made on the disease. The oppression, and difficulty of breathing, on motion, increased so rapidly, as to threaten a fatal lypothymia, from a sudden exertion.

On the 15th, the operation was performed, in the presence of the class, by Dr. Gibson, the attending surgeon, The incision was made between the sixth and seventh ribs, at the point of their greatest projection. Half a gallon of a clear serous fluid, having floating on it, some flocculi of coagulated fibrin, was drawn off. The only inconvenience that was experienced from the operation, was severe coughing, induced by the introduction of a gum elastic catheter. The wound was dressed with adhesive strips. No sooner was the effusion removed from the pleura, than it became painful; ℥ viii. of blood were taken, and sal nitre, gr. x. ordered, every two hours.

In the evening, the pulse had increased in fullness, and frequency: ℥ xii. blood were again taken, and rigid diet prescribed.

Next morning, the symptoms were relieved. The night

had been passed very comfortably. The respiration was no longer embarrassed—no sensations threatening suffocation, on moving, were felt—the pain had nearly disappeared—and the cough was moderated. The nitre produced copious diuresis—a pint of urine was passed every fifteen or twenty minutes. To remove the remains of the pleuritic affection, cups were directed to the left side, to be succeeded by a blister.

Under this treatment, the pleuritic symptoms gradually subsided. The respiration continued free, and without difficulty—the pain entirely disappeared—the patient could lie on either side. The cough continued at times troublesome; and gradually increased in severity; the sputa also began to assume a suspicious character.

On the 5th January, the following was ascertained to be the state of the chest. Left side, resonant throughout its whole extent; the incision had united by first intention, but had not cicatrized; no respiratory murmur was to be distinguished, in any part. Right side, natural resonance on percussion, except the lower portion, where it was, in a slight degree, flatter than natural; respiration puerile, or louder than is usual in adults, crepitous rattle, and occasionally, mucous rattle in superior and middle lobe; respiration fainter in lower lobe. The left side was a quarter of an inch smaller than right, and the left shoulder two inches lower than the opposite.

From these circumstances, the following conclusions were drawn. 1st. No serous effusion had again occurred on the left side. 2d. The left lung had not expanded, but remained compressed, by the air contained in the pleura, or from a change in structure. 3d. Irritation, and sub-inflammation of mucous membrane of bronchiæ, and of the parenchyma of right lung existed, which, from its obstinacy, it might be apprehended, was maintained by the development of tubercles, and consequently, that symptoms of phthisis pulmonalis would soon make their appearance. 4th. That the lower lobe of the right lung, was more congested than the upper, or that a slight effusion existed in right pleura. Ungt.

antimon. tart. was directed to both sides of the chest, and strict regimen.

From this time, Jerry complained of pain, occasionally acute, in both sides of the chest. The ointment produced no effect. On the 16th January, the symptoms were found to be much aggravated. The pain was permanent and acute; the respiration more embarrassed. The diet had not been attended to, and he had indulged his appetite too freely. The left side was now found to return a dull, dead sound, on percussion, below the fourth rib; a clear, hollow sound above. The right side was less resonant, than natural, in its lower portion, where acute pain was also felt. The crepitous rattle had increased in the upper lobe, respiration and rattle scarcely to be heard in the lower lobe. The cough had become very severe and troublesome. On succussion, the splash of a fluid, was again discernible.

It was evident, from this examination, that the pleuritic affection of left side had increased, and had reproduced effusion; and that the inflammation of the right lung, had also augmented, especially in the lower lobe, where was also probably a slight effusion. Cups were directed to both sides of the thorax, with blisters, nitre powders, and absolute diet.

These means produced an alleviation of the pleuritic symptoms. The pain disappeared in a few days, and the respiration improved; copious diuresis existed. The improvement was but temporary. Repeated attacks of the same kind occurred, which subsided after a small bleeding, or cupping. The symptoms of phthisis pulmonalis became daily more marked, the cough increasing, and the sputa becoming purulent.

On the 10th February, in a violent paroxysm of coughing, the incision made in the left side of the thorax, which had not cicatrized, burst open, with an explosion, the noise of which was heard at some distance. It gave vent to a considerable discharge of clear serum, containing coagulated flocculi. The discharge gave relief to the feelings of oppression.

The right side of the chest gradually lost its resonance, indicating the progress of the tuberculous degeneration; œdema of the face and extremities intervened; hectic fever made its appearance; pectoriloquism, the absolute sign of phthisis pulmonalis, at this time was detected in the upper lobe of the right lung; the mucous rattle had become more intense; hemoptysis ensued; and the last scene approached with rapid strides.

This event occurred on the 19th March, with symptoms, indicating suffocation from effusion into the right lung.

The morning of 20th, the body was examined by Dr. GWINNER, the resident house physician, and myself, when the following were the appearances observed. Emaciation almost complete; infiltration universal. On raising the sternum, the right lung did not collapse; the left side of the thorax presented a cavity. The right pleura was reddened with vessels, where lining the diaphragm, a few adhesions existed, and about a gill of effused serum. The lung felt solid. When laid open, numerous tubercles were displayed, some immature, others softened, and some were evacuated, leaving cavities. In the upper lobe, where pectoriloquism had been detected, was a cavity, which could have contained a walnut. In the centre of the lower lobe was another cavity, still larger. The whole lung was infiltrated with serous mucus, and purulent fluid.

The left lung was compressed against the mediastinum, and not more than a fourth of its natural volume. It contained a few tubercles, none in a state of suppuration, and no cavity. It was rendered solid by the long compression it had undergone, but not disorganised nor changed in structure. The pleura pulmonalis, was covered with a thick coating of coagulated fibrin. The pleura had generally a similar coat, but not as thick; that covering the diaphragm, was of a deeper red, and tuberculated.

From the history of this case, and the result of the dissection, it is very evident, that the fatal termination was occasioned by phthisis pulmonalis of the right lung, and not by the pleuritic affection. Had this alone existed,

at least life would have been protracted to a greater length, and a recovery might have ensued. The operation was unquestionably of advantage. The eminent danger of sudden death, from exertion, which so commonly destroys those having hydrothorax, probably from the compression exercised by the surrounding fluid—and in this case, air, on the heart, preventing the perfect performance of its diastole, was entirely dissipated—the distress of the patient was removed—the symptoms were all alleviated—and the progress of the affection retarded. These are advantages quite sufficient to recommend a more frequent recourse to an operation, so little formidable in itself.

ART. XI. *Case of Aneurism.*
Communicated by JOHN RHEA BARTON, M. D.

THE following facts, relative to a case of inguinal aneurism, into which an empiric plunged a lancet, are worthy of record, as well to expose the dangers to which the community is liable, from the wicked ignorance of such practitioners, as to afford a wonderful proof of the powers of nature in resisting the interference of such ruthless hands.

A negro man, about sixty or seventy years of age, named John Brown, lived in the district of Southwark, who laboured under a tumour in the groin. Dr. FLAGLER, of his neighbourhood, was consulted, and finding the disease serious in its nature, called upon his friend Dr. CONDIE, to consult with him: these gentlemen concluded that the tumour was *aneurismal.* At their request, I visited the patient also, and acquiesced in their opinion. Without entering into a detail of the diagnostics, it will be needless to say more than that the tumour and limb bore all the characteristics denoting *true aneurism* of the inguinal artery, just as it emerges from Poupart's ligament. The patient was removed to the Moyamensing (District) Hospital, where the

propriety of an operation was fully to be considered. To our numbers were added Drs. HEWSON, PARRISH, and HARTSHORNE, and the result of our decision was, that any operation would be inexpedient, on account of the patient's age, and the ossified condition of the main arterial trunks of the upper and lower extremities; and in all probability of a similar state of the iliacs—the vessels particularly interested in this case. Our opinion was clearly stated to the patient, and he determined thenceforth to be resigned to his fate; relinquishing any hope of release but from the hand of death.

He took his discharge from the Hospital, and returned home; where, soon after, allured by the positive assurances of an empiric *of his own colour* that a cure could be effected, he submitted to his plunging a lancet into the tumour, under an impression that it was an abscess!!! The consequence was, that instead of pus, a torrent of *blood* issued from the wound—syncope was thereby induced—the hemorrhage ceased, and a coagulum formed, completely filling up the aneurismal sac: the foot and leg then perished for want of a due supply of blood. We found him with a firm inelastic tumour where the aneurism had been, and only half its size, bearing in its centre a cicatrix, where the lancet had penetrated it. He was almost stifled by the fœtid stench from his dead and putrifying limb. The absorbents had already begun to separate this disorganized mass from the living structure, and I had hopes that his constitution would support him through this process; but at the expiration of about six weeks, hectic fever terminated his existence.

Objections were made by the wife to an examination after death, and the body was interred two miles distant from the city; much time was thus unavoidably lost before I could procure the subject for dissection. It was at length effected; but being in midsummer, decomposition had so far advanced, as to render the minute arteries too weak to withstand the force of injection, their condition could not therefore be known.

The external iliac was slightly ossified. The tumour in the groin, now only as large as a small hen's egg, consisted of the dilated artery, forming the aneurismal sac, filled up by coagulated lymph, of a yellowish colour. The femoral artery and profunda femoris, were contracted to one-half their size, and filled likewise with lymph. It was evident, therefore, that what little circulation continued below the groin was maintained by the anastomosing branches, and that, had the patient been possessed of a little more constitutional vigour, *an aneurism of the inguinal artery would have been cured, and the limb saved, by the novel practice of opening the arterial sac, as we unhesitatingly do a common abscess.*

ART. XII. *Two Cases of extra-uterine Conception.* Communicated by JOHN WISHART, M. D., of Washington, Penn.

CASE I.

ON the 4th of October, 1823, I was requested to visit Betsey Williams, a coloured woman, thirty-eight years of age, in consultation with Dr. JAMES STEVENS, of this place, who who had been called a few days previously, to attend her in supposed labour. About a year before, while on a visit to her friends, in Lancaster county, she was seized with a dysentery, so severe, that her recovery was for some time very doubtful. But she slowly got well, and shortly after her return home, before she had regained her common strength, felt all the symptoms of early pregnancy, and afterwards quickened, increased in size, and in every respect had the feelings and appearances of her former pregnancies. In the month of May, she had walked two miles into the country, and when crossing a little brook, on her return, slipped and fell, and, as she expressed it, felt something give way within her, with great pain. Getting home with some difficulty, she was in much pain during the night, particu-

larly across her bowels. Great agitation, and as she thought, struggling of the child, was felt, but from that time no motion of the sort was perceived. She was able, however, to follow her common business until the time Dr. Stevens was called, though her reckoning was up in August. We examined the uterus and abdomen, and also reviewed the whole history of the case, with care, and fully agreed in the opinion, that it was an *extra-uterine conception.* In the language of Dr. Stevens, "we stated to her the dangers, and the prospects attending the proposed operation." She was not long in coming to a determination to have it performed, and on the 6th day of October, we took the fœtus from her side. I made an incision in the right side, within an inch of the umbilicus, in direction along the linea alba, towards the pubes, about six inches in length; cutting through the peritoneum and membranes, a considerable quantity of water was discharged, and one of the legs of the fœtus, first presented, which was laid hold of as a guide. The head was in the left iliac region. The membranes had formed considerable adhesions to parts in contact, but were easily separated. The placenta, and that portion of the membranes connected with it, were partially lodged in the cavity of the right Fallopian tube, which was dilated at the extremity to the diameter of two or three inches, grasped and adhering very firmly to that part of the placenta contained within its cavity and fimbriæ. The wound was closed with sutures, and adhesive straps, secured by a suitable bandage. The fœtus weighed one pound seven ounces, and the placenta two pounds five ounces. Being obliged to leave home for some days, I did not again see her till the morning of the fifth day after the operation. The abdomen was then much swollen; she had every symptom of approaching dissolution, and died before next morning.

We were permitted to examine the abdominal cavity, and found the whole surface covered with marks of inflammation, approaching to gangrene. The right Fallopian tube was much diseased, but had contracted so much that it was only a little larger than the left. The uterus showed no

particular sign of disease, neither was it larger than in the unimpregnated state.

CASE II.

Near the close of January, 1821, Mrs. R——, about forty years of age, the mother of a large family, was delivered of a healthy boy, and had a very favourable recovery. About six weeks afterwards, an unusual sensation was felt in the iliac region, and nausea with other symptoms of early pregnancy succeeded. In the course of three or four months, a tumour of considerable size could be felt a little below the umbilicus. At the usual time, something like quickening was perceived, and motions similar to those of natural pregnancy increased, and contined to be more or less distinctly perceived till the close of the year, when she was seized with pains like those of labour. She had continued to suckle her child, and otherwise enjoyed good health. Dr. COTTON, who was called to attend her, not being able to form any satisfactory opinion of the nature of her case, endeavoured to palliate distressing symptoms as they arose. The pains continued with occasional remissions and alleviations, for several weeks, and then gradually abated, leaving her (with the exception of the enlargement) in a pretty comfortable state. In the summer of 1822, she visited and consulted several physicians, and in company with her husband, called on Dr. LEMOYNE and myself, to examine her situation. She had the appearance of a healthy woman, at the full period of gestation. A large tumour extended across the abdomen, at the umbilicus, also some distance above and below, with a chasm, which could be readily felt between the tumour and the region of the liver. After a careful investigation of all the symptoms, in connexion with the early history of the case, we concurred in the opinion, that it was a case of extra-uterine pregnancy, and that the child had died near the time at which the symptoms of labour had ceased. The probable result of the case was candidly stated, and as the tumour was situated so high in the abdomen, I informed them it would most likely terminate in ascites. In the mean time,

no directions respecting regimen or medicine were supposed to be necessary. On the 21st of November following, I was requested to visit her at her own house, twelve miles distant, and found the abdomen very much enlarged by a collection of some fluid. The tumour, however, remained in its former position. Nine quarts of whey coloured water were drawn from her, and I was then able to trace the form and situation of the tumour which I believed to be a fœtus with the appendages, in which opinion, several intelligent females, who were present, agreed. Bandages were applied, a particular regimen enjoined, and a course of laxatives, diuretics, and sudorifics, was prescribed, with the design of preventing another collection of fluid.

Notwithstanding a variety of means was used, by the 24th of February she was tapped five times in addition to the first, the quantity varying each time from six to eight quarts—and, in every subsequent accumulation, an increased quantity of purulent matter appeared to be diffused. By the 13th of March, the intumescence had increased to its former dimensions, and I was again requested to visit her, but was prevented by the pressure of my engagements. I heard of her death and burial the day previous to that on which I had intended to see her, and regretted that an opportunity was not afforded for an examination, to which she had consented at my last visit.

REVIEWS.

ART. XII. *History and method of cure of the various species of Epilepsy, being the second part of the second volume of a Treatise on Nervous Diseases.* By JOHN COOKE, M. D. F. R. S. F. A. S. Fellow of the Royal College of Physicians, and late Physician to the London Hospital. London. Longman, Hurst, Reese, Orme, and Brown, Pater Noster Row.

THIS work completes the series of our author's very valuable writings on the nervous affections. In some of the preceding numbers of this Journal, will be found a copious analysis of the treatises on apoplexy and palsy, and we now proceed to redeem our pledge of reviewing the one which treats of epilepsy.

Preliminary to the details we shall offer, it may be stated, that in its general character, the work bears a close resemblance to its kindred productions. It is equally learned, evincing much patient research in tracing the history of the disease, from the earliest to the present times, though without any great deal of original observation or reflection, affording an interesting digest of existing materials, scarcely relieved by any new suggestions, either practical or speculative.

To us, our author appears advantageously as a medical scholar, ambitious of the display of erudition, having access to large libraries, which in the execution of his design he has made conspicuously subservient, with no great portion, however, of actual experience, by which only confidence is given to opinion, and decision to practice. Diffident as he is of himself, he is still an excellent historian, whose work may always be consulted with improvement, as a rich repository of facts, collected from sources not readily accessible. We

tender to him our grateful acknowledgments for the benefit we have received from it, and hope to render his labours more extensively serviceable by making our readers acquainted with their results, for which purpose, we shall endeavour to exhibit a synopsis of his work, interspersed with matter which we may occasionally supply. This is indeed a subject on which we are anxious to be heard, having long entertained views as well in regard to the pathology as the treatment of epilepsy, which we believe to be just and know to be useful. They will appear in the progress of this article.

Epilepsy, is a disease which has attracted attention from the earliest times. It is elaborately discussed by Hippocrates—has been noticed by Celsus—by many of his more immediate successors, and by an infinity of modern writers. Yet in every relation, it continues to be involved in much obscurity. By the above title, it is now usually designated, though it has received various other names, as Morbus sacer, Comitialis, Herculeus, Caducus, &c. It was denominated the sacred disease, probably from the sense entertained of its magnitude, the Romans being accustomed to apply that epithet to whatever they deemed great—or from its being supposed to be of divine origin, and cured by supernatural means—or from individuals having it being infested by demons. These are the several conjectures advanced upon the etymology of the term. Either as occurring in the *comitia* or assemblies of the people when they were much agitated by intemperate debates, or because their meetings were dissolved when any one was thus attacked, it is presumed it acquired the name of *Comitialis*, and that of Herculeus, on account of its greatness, or from Hercules being liable to it. As to the title *Caducus*, or falling sickness as we render the word, it obviously was applied from the suddenness with which persons labouring under it are sometimes struck down.

It is said by Hippocrates that epilepsy rarely appears before the twenty-eighth year. But it is incident to every period, though it more commonly occurs in early life, and has been stated by Celsus, Heberden, and other respectable au-

thorities, to be oftener met with in men than women. This accords with our own experience, though it is contradicted by the reports of two of the hospitals of Paris* for 1813, which show a third more epileptic females than males.†

The remote causes, or such as create a predisposition to the disease, are not always intelligible or well defined. It is sometimes connected with malconformation of the head, that, being larger and irregularly protuberant, though neither this, nor any other peculiarity, is observable in a majority of instances. In the uncertainty of our knowledge in this respect, the predisposition to the disease has usually been assigned to a certain "constitution of the brain and nervous system," attended by more than ordinary sensibility or irritability, or mobility, rendering it acutely susceptible to impulses, as well mental as physical. No doubt there is some foundation for the fact, and that most cases of epilepsy are met with in persons thus circumstanced. It is the temperament of genius, of vehement passions, and of the highest order of intellectual capacity, and hence many of the most distinguished characters the world has produced, have been subject to the disease, among whom may be enumerated Cæsar, Mahomet, Napoleon, Petrarch, Rousseau, and the Archduke Charles. Yet it does not invariably hold, and sometimes we are presented with equally remarkable examples to the contrary, as in the dull, the stupid, and insensible, approximating to idiotcy. As a general rule, it may still be stated, that extreme delicacy of body, with a quick irritable temper, and a sensitive mind, mostly predispose to the disease.

Epilepsy is often hereditary, extending to whole families of children, of which a striking instance is recorded by Tissot, of a father who having the disease, transmitted it to his eight sons and three daughters.‡ The predisposition sometimes is latent in the first, breaking out in the second or third generation, in this respect, conforming to other diseases of a similar nature.

* Bicetre and Salpetriere. † Cooke, p. 52. ‡ Ibid p. 51.

Concerning the exciting causes, which are very numerous and of several descriptions, there is much less doubt—some acting directly on the brain in different ways, others indirectly, and remotely. Compression of that organ, by congestion of its vessels, or extravasations of blood, or effusions of serum, or tumours, or morbid derangements of structure, or depression of bone, may occasion it.

Certain states of the mind have also great effect in this way, operating either by increasing or diminishing cerebral energy. Thus it is excited not less by the strong emotions of anger, or joy, or terror, or violent grief, than by the depressing influence of sorrow, or fear, to which purport, many facts might be cited,* and especially as to the influence of frights.

In some instances, it may be traced to powerful impressions made on the senses, as by offensive odours,† or by loud sounds, as that of trumpets,‡ or by the sight of objects of a bright red colour,§ or of an individual in a paroxysm of the disease, the last operating either by the terror of the contemplation, or by the force of imitation only.

Epilepsy is, moreover, sometimes owing to the suppression of eruptions, as tinea capitis, psora, and similar affections, or to checked evacuations, to which the system has become habituated, as diarrhœa, or hemorrhage, or to the healing up of old ulcers, or setons or issues. These constitute the cases from metastasis, and which have been noticed by Hippocrates, Trepius, Hildanus, Hoffman, Carthuser, Tissot, and many other writers.

Most of the preceding causes may be supposed to act on the brain, so as to induce cerebral epilepsy. But there are others which affect parts so distantly situated, and widely detached, as scarcely to be included in this class. These are next to be enumerated, and we shall commence with such as affect the alimentary canal, as the irritation from painful dentition—worms, particularly tænia—sordes of

* Cooke, p. 63. † Aretæus. ‡ Shenkius. § Ibid.

any kind—constipation—excess in eating or drinking—improper ingesta, though small in quantity—or poisons, either the acrid or narcotic, as lead or arsenic—or the cicuta aquatica—or stramonium—or the several species of nightshade.*

Equally is it true, that impressions on other organs, and especially the uterus, are occasionally productive of the disease, which may be thus excited either in the pregnant or unimpregnated state—the first constituting eclampsia, or puerperal convulsions—and the second uterine epilepsy, properly so called—the one caused by the irritation of the gravid contents—and the other by amenorrhœa, and particularly dismenorrhœa.

That it may depend on a morbid state of the spinal marrow, has been long suspected, and is now amply confirmed by the accurate dissections of Esquirol, and other cultivators of pathological anatomy. Nor does it less appear, that it proceeds from lesions, or injuries of the nerves merely local, according to the testimony of the most respectable names.† Not, however, unnecessarily to multiply facts of this sort, we shall refer only to two cases, reported in the Edinburgh Medical Essays and Observations—one caused by the pressure of a small sharp calculus, on a branch of the sciatic nerve—and the other by a cartilaginous substance of the size of a pea, on the nerve of the finger, on the removal of which, the disease ceased. Either as an original condition, or the effect of some one of the causes detailed, repletion of the blood-vessels is very generally associated with epilepsy, and is considered, perhaps justly, as the most common exciting or accessory circumstance. It is not a little curious, however, that in a state of sleep, when most irritants of the system are withdrawn, or act with less energy, there is greater liability to an attack. This fact, however, may be explained on the supposition of increased sensibility in sleep, and by the rush of blood to the head, produced by the recumbent position, with flexed extremities.

* Cooke, p. 73. † Forestus, Van Swieten, Tissot, &c.

Numerous, however, as are the obvious causes of this disease, it sometimes appears without any to which it can be assigned. It is this, with the terrible aspect it occasionally presents, which led, in the darker and more superstitious ages, to the notion of its being dependent on supernatural agency, or the influence of the heavenly bodies. The demoniacs of Scripture are endeavoured to be shown by a pious and learned writer,* to have been epileptics, and that the casting out of the devils, to which their condition was ascribed, was really no more than curing the disease, or as it is expressed in scriptural language, "made whole."† But we, believing with the "defenders of the faith," adhere to the old and established interpretation, which considers these as miracles. Taken in either view, however, we have no reason to suppose, at present, that epilepsy is dependent on any other than a natural agency, and certainly not on demoniac influence. We have seen, it is true, many an individual with a devil in him, productive of enormous evils, though never exactly of this disease.

It may be deduced from what we have said, that the disease must vary exceedingly in the mode of its approach, and exhibit great diversity of symptoms. An attack sometimes comes on without any premonition whatever, the person being suddenly seized with a loss of feeling and consciousness—falling to the ground as if cleft down. But it is more common to be admonished of a paroxysm, by languor, torpor, pain or giddiness of the head, a ringing or buzzing noise in the ears, dimness of vision, or flashes of light before the eyes, or the smell of peculiar odours, as that of musk‡—by fulness of the vessels of the neck, and sometimes by a temporary aberration of mind. Connected with these symptoms, or independently of them, as may happen, there is vomiting, pain in the bowels with looseness, or the reverse, constipation—a sense of constriction and inflation about the præcordia, difficulty of respiration, palpitation of the heart, rum-

* Dr. Farmer, Cooke, p. 46. † Matthew, chap. iv. ver. 24.

‡ "Gustu et odore moschi." Heberden.

bling in the intestines, and a rushing up of wind to the throat, copious discharges of pellucid urine, coldness of the extremities, &c. The most extraordinary phenomenon, however, is what is called the aura epileptica, forming sometimes the only precursory symptom. It consists in a sensation which is compared to a cool and gentle air, or a stream of cold water, or the creeping of insects—a sort of formication commencing at some remote point, most generally from the extremities to the head, on reaching of which, coma or convulsions ensue.* The cause of this phenomenon is not well understood, though it is probably owing, as is conjectured by Cullen, to an affection of a nerve acted upon by some irritation or direct stimulus, and following the course of such nerve to the brain. This hypothesis is sustained by the fact, noticed by several writers, that the aura epileptica distinctly arose from local diseases, and among other cases of this sort is that of a lady, who by having a diseased toe amputated, from which the aura constantly proceeded, was entirely cured of epilepsy.†

In the paroxysm,however induced, the symptoms and condition are as diversified as the preliminary signs. When mild, there is a slight convulsion, with some frothing of the mouth, and distortion of features, soon succeeded by sleep very little disturbed—or without falling to the ground, the person is only affected with some agitation of the head or extremities, attended by a vacant, fixed, unmeaning expression, from which he speedily recovers. In other cases, it amounts to catalepsy, partial or confirmed, in which the individual, standing in a fixed position, with tetanic rigidity of the whole muscles, or otherwise, and loss of the senses, remains for a time with a vacant expression of countenance.

Mostly, however, there is stupor and insensibility to all impressions, even to violent irritants, with a suspension apparently of the senses, internal and external, and loss of muscular motion. Whether under such circumstances, any degree of consciousness ever remains, is doubtful, and though

* Cooke, p. 6. † Cooke, p. 10.

the affirmative is maintained by some writers, it must seldom happen, since we have never seen any evidence of it.

In other instances the whole muscular system is thrown into violent contortions, amounting to tetanus in all its varieties, sometimes the limbs of one side only are affected, or the head may be drawn forward or backward, or laterally, resting on the shoulders, or down to the pelvis, or with occasionally such a universal and powerful convulsion that many persons are required to hold the patient. As is remarked by Boerhaave, there is no gesture, distortion, or posture which is not sometimes represented in the epileptical paroxysm, so irregular is the action of the muscles. The face largely shares in this general affection, and such is the horrible expression, that many involuntarily turn from it with dismay. It is pale, or livid, or even black, the eyes are open, rolling furiously or fixed and staring wildly, the mouth foams, the lips are convulsed, the teeth chatter, the tongue is protruded, and bleeding from the laceration caused by the occasional spasmodic contractions of the jaws, which are sometimes so violent as to cause a fracture of them, or of the teeth, or they continue so firmly clenched as not to admit of the introduction of a spatula.

Connected with this state, there is often much disturbance of important functions. The heart palpitates, the pulse is irregularly accelerated or retarded, the respiration is oppressed or even stertorous, the stomach becomes sick and ejects bile, the bowels give way, and their contents are copiously discharged, and finally, in the language of Hoffmann, "Erigitur quoque penis in infantibus: semen ejicitur in adolescentibus, et sæpius urina ad magnam distantiam prorumpit."

As described, such is an aggravated paroxysm of tetanoid epilepsy, the worst form of the disease, which happily, however, more frequently occurs in a mitigated shape.

Relative to the duration of the fit and time of its return, there is no uniformity. It may continue from a few seconds or minutes, to many hours. The average period is probably fifteen or twenty minutes, when the symptoms gradually subside, the patient falls asleep, or is completely aroused

But in some instances, though by no means common, little time elapses before there is a repetition of the attack, and so the disease is kept up for one or two days. Cases are to be met with, in which the paroxysms occurred daily, weekly, monthly, semi-annually or annually, and after a very long interval—even thirteen years.*

No less various are the terminations of epilepsy. Death very rarely takes place in the paroxysms, though occasionally it degenerates into apoplexy and thus proves fatal. It is by the protracted continuance of the disease that mischief ensues. The powers of the stomach first give way, the head suffers from pain, muscular strength is impaired, emaciation follows, the skin gradually loses its colour and assumes a saturnine hue, paralysis supervenes, and particularly of the auditory, optic, and vocal nerves. With these corporeal infirmities there is a correspondent decay of the intellectual faculties, manifested at first, by dejection, torpor and heaviness, next by a failure of memory, and so progressively till the imbecility of idiotcy is confirmed, or taking another course, it becomes violent mania.

Epilepsy, however, does not always end thus. Many are the examples where the disease has continued during a long life, with little injury, corporeally or mentally, of which we have instances in the illustrious characters formerly mentioned.

On dissection, appearances are found so analogous to those in apoplexy and palsy, that we might merely refer to what we have said on this point in relation to those diseases, and at which, as regards certain instances, we are not to be surprised, since epilepsy sometimes eventuates in those very affections. It is in the brain that we chiefly detect morbid phenomena, such as congested vessels, extravasated blood, effusions of serum in the ventricles and between the membranes, of various qualities, from a pellucid fluid to a jelly-like consistence—inflammation, thickening, and other alterations of structure, as well in the fissures as the sub-

* Heberden.

stance of that organ, which sometimes is preternaturally hard or soft—extensive abscesses, tumours, fatty or fleshy, tubercles, hydatids, exostoses, depressed portions of bone, sharp pointed spiculæ, &c.

Morbid manifestations have also been observed in other parts of the body, "particularly in the heart, the lungs, the liver, the stomach, the bowels, and urinary bladder, though how far these were connected with the disease, as causes or effects, it is not easy to determine."* It is stated by M. Prout, who dissected largely in the Parisian hospitals, that masses of worms were very commonly to be met with in different portions of the alimentary canal. Conspicuous as is commonly the evidence of organic and other lesions in this disease, it has often happened, that no such marks existed in any of the three great cavities, and this has tended to increase the obscurity of its pathology. But perhaps this, in part, may be owing to the imperfection of our researches. It is remarked by M. Wenzel, a late writer, that all the appearances within the cranium, noticed by Bonetus, Lieutaud, Morgagni, and Tissot, on whose reports we have chiefly relied, relate to the cerebrum, and hence he infers, that their inspections were confined to it. But according to him, the cerebellum is even more the seat of the disease, from the numerous lesions which it suffers, resembling very closely such as are found in the cerebrum, though to a greater extent and more diversified.† We also learn from Reid, a still later authority, that when the brain is met with altogether sound, the theca of the spinal marrow is highly inflamed, the medullary mass appearing "covered with a minutely injected vascular tissue"—and this so often occurring, he is led to believe that the spinal marrow is the immediate and primary seat of the disease, and the affection of the brain consecutive and secondary, accidental and not material to its existence.‡

Epilepsy is so peculiar in its characteristics, that the diagnosis need not long detain us. The disease which mostly

* Cooke, p. 39. † Ibid p. 30. ‡ Trans. Coll. Dub. vol. iv.

resembles it is hysteria—from which it may be distinguished by a contrast of the symptoms incident to each affection. In the paroxysm of the first, there is the distortion of the countenance, such as the livid aspect, the expression of the eyes, the gnashing of the teeth, the foaming of the mouth, and its speedy subsidence into tranquil sleep, or heavy stupor: whereas, in that of the second, independently of other circumstances, there is the globus hystericus, which is pathognomic, the sudden transitions from involuntary laughing to weeping, the general nervous agitation, the copious discharges of pellucid urine, the length of duration, or the rapid succession of the paroxysms. What we have now stated, however, regards the more distinct form of the disease. Complicated as it is sometimes, and especially with the symptoms of apoplexy, the diagnosis becomes very obscure, and perhaps, under such circumstances, they are essentially the same.

In a practical view, it is more important to determine the position or organ in which the case originates. As little peculiarity, however, exists in the paroxysm of secondary epilepsy, we are not to rely so much on the symptoms of it as on other sources of intelligence. Either gastric or enteric, for the primary irritation may arise in the stomach or bowels, we shall almost invariably discover manifest disorder in the functions of these parts, such as depraved secretions, furred tongue, irregular appetite, painful sensations, imperfect digestion, præcordial anxiety, offensive breath, tumid abdomen, constipation, or occasional purgings of an unnatural appearance, morbid urine, pellucid or heavily loaded, startings in the sleep, convulsive twitchings, and grinding of the teeth. These indications, however, apply more particularly to the cases of children who are most exposed to this species of epilepsy, though they are met with in a greater or less degree in those of adults.

As a guide to the uterine form of the disease, it may be remarked, that it commonly makes its appearance about the season of the catamenia, before the function is fully established, or subsequently, in the event of painful amenorrhœa,

with much nervous irritation, and is incident especially to girls of ruddy complexion, plethoric habits, and extreme mobility of system. It may also take place in the pregnant or parturient state, with which, as appertaining to the province of midwifery, we have no concern. The paroxysm, though usually resembling that of ordinary epilesy, is sometimes more imitative of *Lypothymia*, or a sudden loss of consciousness, the person appearing as in sleep, or the condition of syncope, with relaxed muscles, feeble circulation and pallid surface, or it wears the aspect of an hysterical affection, so much so, as to be denominated hysteria epileptica, attended by the most tremendous spasms and convulsions, with a full, vehement, and disturbed circulation.

Caused by irritation of the spinal marrow, or of a nerve, we know of no distinctive sign, save, that it is more apt in the latter to be preceded by the aura epileptica, though in some instances it is to be recognised by an obvious lesion.

In epilepsy from metastasis, as formerly noticed, we must determine its nature by a careful perquisition into the history of the case, so directing the inquiry as to ascertain whether any eruption or discharge has been suppressed.

As the most certain foundation for our prognostications in Epilepsy, we should have regard to the age, habits, and constitution of the patient, as well as to the causes of the disease. Being dependent on congenital or acquired deformity, or any of the organic lesions formerly noticed, it may be deemed, for the most part, as incurable. Entailed as an inheritance, it is pronounced in contradiction to the opinion of Hippocrates, by Boerhaave and his commentor Van Swieten, as equally irremediable, and this is substantially confirmed by common experience. When occuring in advanced life, or even after puberty, it usually proves more intractable, and not less so in shattered constitutions, or where the fits are of frequent recurrence, or the case is of protracted continuance, originating in some immoveable cause, or riveted by habit too strong to be overcome, and especially if it be connected with alienation of mind.

The prognosis is, of course, more favourable under opposite circumstances, particularly in childhood, and existing as a secondary, and not a primary affection of the brain. It occasionally happens, that the disease spontaneously ceases after all our efforts have failed, about the period of maturity, and oftener in females, by the supervention of the menses, and in some rare instances it is supplanted and cured by fever, and obstinate cutaneous eruptions.

In relation to the precise nature of epilepsy, we are really embarrassed what to say. Much as it has been investigated, it still remains so obscure, that no view can be taken of it which will lead to such a successful treatment as entirely to warrant its correctness. This perplexity arises chiefly from the various and dissimilar causes by which it is produced, the difference in its primary seats, and the opposite conditions of system with which it is associated. It would be an idle expenditure of time, to review the numerous and conflicting hypotheses advanced on the subject, and especially in the early state of medicine. The common notion is that epilepsy, and the analogous affections, essentially depend on a disordered state of the nerves and brain. But we are very imperfectly acquainted with the functions of these parts even in health, and until their physiology is better illustrated, it is vain to indulge in speculations as to their precise morbid derangements, or at least, to expect a satisfactory elucidation. It has long been our opinion, and this was published more than ten years ago, that the whole of the neuroses, though commencing in nervous and cerebral irritation, soon involve the blood-vessels, occasioning an irregular circulation, with undue determinations of blood, productive of topical congestion or inflammation of the brain, one of both states in varied degrees.

That this hypothesis is not destitute of support will, perhaps, appear from considerations which we are now to present.

1. From the causes. It will be recollected that in congenital epilepsy, the head is generally of preternatural dimensions, or otherwise deformed, predisposing to an afflux of

blood to it, and that the exciting causes, as blows, or other injuries, as is exemplified in hydrocephalus—or strong mental emotions from joy, or rage, or terror—or vivid impressions on the senses—violent exertion of any kind, in the athletic exercises—or loud speaking, or even coughing, or sneezing, have a similar tendency.

2. From the symptoms. As precursory signs, there is often vertigo—tinnitus aurium—headach—dimness of vision—flashes of light before the eyes—alienation of mind—and in the paroxysm, the face becomes flushed or livid—the eyes are wild, the carotid and temporal arteries pulsate strongly, with stupor and loss of the senses—vehement palpitations, &c.

3. From the appearances on dissection. These are in the brain congested vessels—extravasated blood—effusions of serum—inflammation of the tissues—and an infinity of organic lesions in its substance and its envelopes.

4. From its analogy to diseases, confessed to depend on a similar condition of the brain. Though differing from apoplexy and palsy, in several particulars, they are all convertible diseases. Epilepsy sometimes terminates in apoplexy,* or palsy,† and these in epilepsy—while in other instances, the symptoms are so blended, that it is difficult to make a just nosological designation.

Against these arguments we are aware it may be urged, that they apply only to cerebral epilepsy. But we will now show, that they have scarcely less relation to the other forms of the disease, commencing in irritation of remote parts of the system. Such is the fact as regards uterine epilepsy, which indeed under all circumstances, is conspicuously marked by redundancy of blood in the brain, and not less so, in those instances of metastasis, from suppression of sanguineous discharges, or of cutaneous eruptions. Equally does this state of cerebral fullness follow sometimes, though perhaps not so uniformly, impressions primarily made on the alimentary canal, as we see illustrated in hydrocephalus, apo-

* Morgagni, lib. i. cap. 4 et 9. † Ferrier, vol. II. p. 11.

plexy, and palsy, and from analogy, independently of more direct evidence, we might infer it in the case before us.

Diseased action, originating in a part, may be extended to some distant one by metastasis, or by what is ordinarily termed sympathy. Taking place in the former mode, the primary suffering part is entirely relieved, by a vicarious assumption of the disease, though it is apt to be resumed, and sometimes very suddenly, as in gout and rheumatism. In the latter case, the secondary affection occurs and continues without any diminution or change in the one previously existing. What is the state of the primæ viæ, which bringing the brain into concert, causes epilepsy, cannot be precisely determined. It would seem in recent attacks to be merely a form of irritation, as in the instances of worms or sordes, and under different circumstances, or where the disease is protracted, sub-acute or chronic inflammation. The symptoms, as well as the phenomena on dissection, go far to support such conclusions. Yet it must be admitted that epilepsy has often existed and terminated fatally, exhibiting on a careful inspection, no evidence whatever of cerebral lesions, or indeed in any part of the body. Has not, however, the same happened in apoplexy, palsy, hydrocephalus, affections universally confessed to be mainly located in the brain, leaving generally prominent manifestations of their ravages? Deny, therefore, the correctness of this pathology in the one, and we must, on the same principle, in the whole of these cases. It is well remarked by an illustrious writer, that a few partial objections ought not to shake a well founded theory. The human mind, says he, is so limited, that it cannot take in all the parts of a subject, so that there may be objections raised against any system, however perfected or matured.* Considering epilepsy to originate in morbid irritation of the brain, either primarily or secondarily, for all irritations of the nerves are transmitted to it as the sensorium commune, and that irritation producing, as it must necessarily do, an

* Dr. Johnson.

afflux of blood, causing congestion, which by continuance, eventuates in inflammation, and its consequences, we are supplied with a pathological view corresponding better with the causes, the symptoms, the phenomena on dissection, and the method of cure, than any other which has been proposed on this difficult subject. But it may be alleged, that such is also the condition stated, as constituting the proximate cause of apoplexy and palsy, between which and epilepsy, there are several points of difference. This is not to be denied, though while conceding the dissimilarity in their general physiognomy, we must insist on their identity in other particulars, and cannot forbear to advert, in demonstration of it, to the conclusive fact of the reciprocal convertibility of the three diseases. Why the brain developes one or another form of the disease more distinctly, we have as little precise intelligence, as in the instance of the irritated or inflamed mucous tissue of the bowels, under nearly corresponding circumstances, producing cholera or dysentery, or diarrhœa. Establishing the fact, the *rationale* is comparatively of minor importance.

As epilepsy presents several forms, practical convenience requires that these should be classified. Disregarding the minute divisions which have been made of it by some of the nosologists, we shall treat of it as idiopathic, and symptomatic, under which two heads, we suspect, its leading varieties may be included, without any defect of perspicuity.

The management of the disease divides itself into what is proper during the paroxysm, and in the interval, with a view to its eradication, or entire cure. As the first step, the patient is to be placed on a bed, with his shoulders and head elevated, and every part of his clothing, particularly the cravat, which, by pressure, can interrupt the circulation, is to be removed. Convulsions being violent, he is to be held down, and, to prevent laceration of the tongue, by the teeth, from the spasmodic action of the jaws, something soft should be interposed between them. It is said,* that

* Mosman, vide Cooke, p. 102.

by thus mechanically distending the jaws, the fit has been arrested, and the same of opening the fingers, when these are firmly clenched, to which, however, though affirmed by some respectable authority, we attach no credit. It is a practice with some, arising, perhaps, from a false assimilation of the case to syncope, to use frictions to the surface, and to apply nervine, sternutatory, or volatile substances to the nose. But the reprobation of it by Celsus, has been confirmed by subsequent experience, and is now never resorted to by the intelligent and enlightened. As safer remedies, sinapisms are preferred. Employed with discrimination, emetics are of great advantage, whatever may be said to the contrary. To the use of them, we were led in part by theoretical views, long entertained, and still more, from the success we had witnessed from them, in the hysterical paroxysm. Of course, they are chiefly applicable to the gastric species of the disease, and never admissible in cases of heavy cerebral congestion. Directly the reverse of this, we are to observe, in relation to venesection, the propriety of which is so warmly disputed, that not a few of the European writers, as Tissot, Heberden, Cooke, &c. condemn bleeding altogether, as weakening the patient, without reducing the force of the paroxysm. But in this estimate, we do not concur, and can only ascribe it to a misapplication of the remedy. It is true, that venesection is never followed by the prompt and decisive effects which might, under all circumstances, be anticipated, and should be limited exclusively to cases marked by cerebral fullness or excitement—and here, we have often seen it unequivocally serviceable. Topical bleeding may, however, sometimes be substituted.

In meeting the second indication, relating to the interval between the paroxysms, there are several considerations, that ought to influence the choice of remedies. It is sometimes of great moment to ascertain the primary seat of the disease, and always still more, the condition of the vascular system, associated with it. Commonly, this is active and plethoric, with evident determinations to the head, though

the pulse is seldom tense, hard, or corded. The leading object is to empty the vessels, and reduce the momentum of the circulation, with which view, venesection is indispensable, to be repeated as long as the necessity for it exists. On this point, there is now very little difference of opinion, among the best practitioners, whether of Europe, or this country—and as regards the appropriateness of the remedy, it is quite immaterial, as to the species of the disease, though it is more frequently demanded in the cerebral and uterine, than in the gastric cases. It is particularly recommended by Aretæus, and his contemporaries, and since, by Rhodius, Riverius, Severinus, Zacutus, Lusitanus, Peichlin, Boerhaave, Van Swieten, Tissot, Fothergill, Cooke, &c.* and the propriety of which is vindicated, as well by the positive evidence of its success, as that cures have sometimes happened by accidental losses of blood, and still oftener from copious and repeated bleedings in certain febrile or other inflammatory affections, superinduced on epilepsy.† Cullen, however, gives to it only qualified praise, and it is utterly condemned by Heberden, and the disciples of the school of London of that day, which denunciation corresponds with the characteristic feebleness of their practice.‡

Next, we are to resort to evacuations of the primæ viæ, by emetics, or purgatives, or both, occasionally. The first are rarely prescribed, and probably, are only applicable to cases unequivocally of gastric origin, proceeding from the irritation of sordes, or some other of those causes formerly mentioned. Much more confidence is justly reposed in purgatives. It will appear, by consulting the ancient authorities, Hippocrates, Celsus, Galen, and Aretæus, Alexander of Trales, and the writers of the Alexandrian school generally, that they insisted on the efficacy of the practice. The latter, particularly, of those named, declares, that he often cured the disease by it exclusively. Yet, in the progress of time, the practice sunk into neglect, or was so feebly sustained, as scarcely to be traced. The revival of it may be

* Cooke, p. 110, 111. † Ib. 112. ‡ Ib. 118.

ascribed to Hamilton, the author of the work on purgatives, who, however, limits it mainly to the cases proceeding from worms. Except under such circumstances, or enteric irritation from other causes, it is positively prohibited by Heberden, * and most of his contemporaries. Thus stood the reputation of the process, when we first entered on the exercise of our profession. By no one, perhaps, has purging been pushed to the same extent, as by ourselves. To its adoption, we were led, not less by theoretical views of the disease, than by the total failure of the ordinary plan of treating it by tonics. Nor could we help being encouraged to pursue it by the great advantage which we had derived, from the same practice, in several of the kindred affections. Epilepsy, in common with all these cases, is connected, as we have shown, with a certain mobility of the system, which seems to proceed very often from irritation in the alimentary canal. When, therefore, we suspect the disease to be thus seated, we must look to emetics and purgatives as the chief means of cure. The circumstances under which emetics are proper, we have already indicated. Nor are cathartics limited only to such cases. Whenever we wish to subdue the force of the circulation, or divert undue determinations from the head, they become equally appropriate, and as much in uterine epilepsy as in any form of the disease. Determining on the use of purging, it will not do merely to evacuate the bowels. Cathartics, on the contrary, must be repeated almost daily, without interruption, unless absolutely forbid. By continuing this course for many weeks successively, we have cured several cases of the disease, and afforded considerable relief in some others. Our success, indeed, has been such, that we are almost encouraged to hope, could we induce our patients to persevere in the use of this process, the disease would become incomparably more manageable than it has hitherto proved.

Let it not, however, be understood, that we limit the treatment of epilepsy only to purgatives. Even those cases which are most strictly primary affections of the alimentary

* Alios epilepticos purgare alienum est. Heberden, p. 144.

canal, uniformly require the aid of other remedies. To remove the state of plethora, so often incident to the disease, venesection, as well as topical bleeding by leeches, or cups to the head, becomes necessary. Nor is it less important, under such circumstances, to impose the strictest regulations with regard to diet.

The system being thus prepared by the various evacuations which have been stated, we may, as in other paroxysmal diseases, employ tonics to confirm the cure. But before we proceed further, let us endeavour to inculcate with the strongest emphasis, the inexpediency, and even danger, of a premature recurrence to this class of remedies. No less important, than in intermittent fever itself, is it to institute the preparatory processes which have been suggested, in relation both to the alimentary canal, and the blood-vessels. Nor while under the use of tonics, should we be unmindful of the return of those symptoms, which, according to the principles we have laid down, contra-indicate their employment. The intermission of such a course will occasionally become necessary, by a renewal of vascular excitement, or deranged state of the stomach, or bowels, which must again be rectified. It is under such circumstances, that the antimonials in minute doses, continued for some length of time, prove of immense service, as well by the reduction of the phlogistic diathesis, as by their more specific mode of action. By Abercrombie they have lately been favourably spoken of, and we are glad to have his corroboration of a practice, which we have long known to be useful.

As in all other paroxysmal diseases, the remedies in this case are exceedingly numerous and diversified, some operating by imparting tone, while others seem to produce merely an alterative effect, and perhaps the efficacy of the whole may be ascribed to the power of breaking the trains of morbid and irregular association, by which the disease is continued, by setting up their own mode of action in place of it.

It may be affirmed, that at different times, the whole of the stimulants and tonics, vegetable and mineral, have been

prescribed, and are now retained, though with various degrees of reputation. To the works on Materia Medica, we refer for all details relative to the doses and modes of exhibition of these articles, and shall now do little more than enumerate them, with the preliminary remark, however, that they have hitherto been very empirically prescribed, the practice as to them being tentative and experimental, each one tried separately, or combined, without any definite rule, or established guide to the administration.

As might be expected, the Peruvian bark stands first in this catalogue of remedies. It is highly praised by De Haen, by Home, by Cullen, and by Tissot, and particularly in the decidedly periodical form of the disease. * The valerian has had scarcely less reputation. It is noticed by Dioscorides, Aretæus, and many of the early writers, with high praise. The practitioners of the continent of Europe particularly, have never ceased to confide in it, and Tissot thinks it incomparable in the weaker forms of epilepsy. Yet, it is very little appreciated by the English authorities, as Cullen, Home, Heberden, Woodville, Fothergill, Frazer, and this estimate of it is confirmed by our own experience. It is given alone, or with bark. The fame of the misletoe was at one period, well established. Known to the ancients, and confided in by Boerhaave, Van Swieten, Haller, Colbatch, De Haen, Fothergill, Thompson, Willan—its virtues have been strongly praised by Frazer, in a recent tract on epilepsy. But on the other hand, it is denounced as nearly inert, by Cullen, Home, and Tissot, which is probably true, and certainly, it is now seldom prescribed.† Nearly on the same footing must be placed the leaves of the orange tree, once so strenuously recommended by De Haen, Locker, and many other of the writers of the continent of Europe. They were fairly tried by Home, and Tissot, and found inefficient. ‡ Nor has the meadow Narcissus, formerly of some celebrity, more successfully maintained itself, with all the vauntings in its behalf, of Dufresnoy, by whom it was introduced. Lately,

* Cooke, p. 133. &c. † Ib. p. 141. ‡ Ib. p. 136.

canal, uniformly require the aid of other remedies. To remove the state of plethora, so often incident to the disease, venesection, as well as topical bleeding by leeches, or cups to the head, becomes necessary. Nor is it less important, under such circumstances, to impose the strictest regulations with regard to diet.

The system being thus prepared by the various evacuations which have been stated, we may, as in other paroxysmal diseases, employ tonics to confirm the cure. But before we proceed further, let us endeavour to inculcate with the strongest emphasis, the inexpediency, and even danger, of a premature recurrence to this class of remedies. No less important, than in intermittent fever itself, is it to institute the preparatory processes which have been suggested, in relation both to the alimentary canal, and the blood-vessels. Nor while under the use of tonics, should we be unmindful of the return of those symptoms, which, according to the principles we have laid down, contra-indicate their employment. The intermission of such a course will occasionally become necessary, by a renewal of vascular excitement, or deranged state of the stomach, or bowels, which must again be rectified. It is under such circumstances, that the antimonials in minute doses, continued for some length of time, prove of immense service, as well by the reduction of the phlogistic diathesis, as by their more specific mode of action. By Abercrombie they have lately been favourably spoken of, and we are glad to have his corroboration of a practice, which we have long known to be useful.

As in all other paroxysmal diseases, the remedies in this case are exceedingly numerous and diversified, some operating by imparting tone, while others seem to produce merely an alterative effect, and perhaps the efficacy of the whole may be ascribed to the power of breaking the trains of morbid and irregular association, by which the disease is continued, by setting up their own mode of action in place of it.

It may be affirmed, that at different times, the whole of the stimulants and tonics, vegetable and mineral, have been

prescribed, and are now retained, though with various degrees of reputation. To the works on Materia Medica, we refer for all details relative to the doses and modes of exhibition of these articles, and shall now do little more than enumerate them, with the preliminary remark, however, that they have hitherto been very empirically prescribed, the practice as to them being tentative and experimental, each one tried separately, or combined, without any definite rule, or established guide to the administration.

As might be expected, the Peruvian bark stands first in this catalogue of remedies. It is highly praised by De Haen, by Home, by Cullen, and by Tissot, and particularly in the decidedly periodical form of the disease.* The valerian has had scarcely less reputation. It is noticed by Dioscorides, Aretæus, and many of the early writers, with high praise. The practitioners of the continent of Europe particularly, have never ceased to confide in it, and Tissot thinks it incomparable in the weaker forms of epilepsy. Yet, it is very little appreciated by the English authorities, as Cullen, Home, Heberden, Woodville, Fothergill, Frazer, and this estimate of it is confirmed by our own experience. It is given alone, or with bark. The fame of the misletoe was at one period, well established. Known to the ancients, and confided in by Boerhaave, Van Swieten, Haller, Colbatch, De Haen, Fothergill, Thompson, Willan—its virtues have been strongly praised by Frazer, in a recent tract on epilepsy. But on the other hand, it is denounced as nearly inert, by Cullen, Home, and Tissot, which is probably true, and certainly, it is now seldom prescribed.† Nearly on the same footing must be placed the leaves of the orange tree, once so strenuously recommended by De Haen, Locker, and many other of the writers of the continent of Europe. They were fairly tried by Home, and Tissot, and found inefficient.‡ Nor has the meadow Narcissus, formerly of some celebrity, more successfully maintained itself, with all the vauntings in its behalf, of Dufresnoy, by whom it was introduced. Lately,

* Cooke, p. 133. &c. † Ib. p. 141. ‡ Ib. p. 136.

the root of the *May wort*, (artemisia vulgaris,) has been very confidently proclaimed by Burdach, and Hufeland, as of great value in this disease, exhibited in the dose of a drachm just before the anticipated period of the paroxysm, which it prevents, and sometimes effects a complete cure. We have not tried it, and state the fact, merely on their authority.*

Whatever may be the occasional efficacy of these vegetable articles, they are undoubtedly inferior in the estimation of the generality of practitioners to the mineral tonics—among which, the nitrate of silver has the largest share of confidence. As early as the very commencement of the seventeenth century, it appears to have been used by a chemist of the name of Angelus Sala, and recommended immediately afterwards by Geoffrey and the celebrated Boyle.† But ultimately, it fell into neglect, from which it was revived, by an incident somewhat ludicrous. An epileptic, much afflicted, having swallowed a shilling, was speedily relieved of the disease, and after a year having puked it up with corroded edges of a black colour, it was supposed to have become nitrated, and to which circumstance, the cure was imputed.‡ It has since been much employed, and we have in its favour the accumulated testimony of Powel, Sims, Cappe, Bostock, Wilson, M'Ginnis, Gough, Roget, Halford, Harrison, Johnson, and Ballie, all good, and some eminent names.

In this city, it has been extensively tried, in public and private practice, as well by other physicians as ourselves, and the decision would not be very strongly in its favour. If it be admitted to palliate symptoms, or to protract the return of the paroxysms, this is the extent of what could be said of its effects. But perhaps we do injustice to this medicine by

* We have in this city a nostrum, which really appears to merit attention, from the cures it has effected. It consists of a tea-spoonful each of ginger and sage leaves powdered, and mustard seed unbruised, to be repeated for three mornings successively, then omitted for three mornings, and afterwards recurred to in the same way.

† Med. Trans. vol. iv. p. 86. ‡ Med. Trans. vol. iii. p. 30.

exhibiting it in too small doses. By Dr. Powell, who is said to employ it with advantage in most of the nervous affections, from two to five grains are given every six hours. In one case of epilepsy, we gradually augmented the dose to eighteen grains in the twenty-four hours without producing any troublesome effect. Even, however, in this large quantity, it did not cure the disease.

The idle apprehension of colouring the skin by the absorption and subsequent deposition of this article, when freely administered, is probably one of the causes of the timid and inefficient use of it. Several cases of this kind have been recorded. Nothing can be more absurd than such a notion. Thus, other objections aside (the rareness of its occurrence, the exemption of the blood from such colour, and its not taking place in one instance till six months after the discontinuance of the article,) to dye the whole surface of the body, would require a thousand times more of the preparation than was ever given to any individual. The fact is, and by which the reporters of these marvellous stories have probably been deceived—that it is incident to epilepsy, for the skin to assume, from the operation of the disease itself, a livid or leaden hue.

The saccharum saturni has also been employed in epilepsy. As far as we know, this is an American practice, and though at one time, a good deal lauded, we suspect was never deserving of much confidence. During the last twenty-five years, we have seen it greatly prescribed, and except in some cases of children, where it manifestly mitigated the paroxysms, we are not sensible that it was productive of any other effect.

The preparations of zinc, rest on a better foundation. Employed originally by Gaubius, they have since been commended by Guthrie, Hart, Fouquet, Percival, Duncan, White, Haygarth, and by our own practitioners. The sulphate is usually preferred to the oxid, though, in our opinion, erroneously. Commonly, however, the latter is prescribed in too small a dose, and to which, perhaps, the inferiority of its character may be imputed. The oxid in

our hands, has been of little use, till increased to fifteen or twenty or thirty grains, several times in the day.

Not a little is also said of the powers of copper, and especially the *cuprum ammoniatum*. Cullen introduced it, and on his authority, it has been very freely prescribed, though with various results. It is highly extolled by two late writers, Ballo, an Italian, and Battie, of London. Home, Hook, M'Ginnis, and others, however, speak slightingly of it. Our own experience leads us to say, that though in some instances, and particularly in children, it will postpone to a more distant interval the recurrence of the paroxysms, it has not, within our knowledge, accomplished one single cure of epilepsy. Yet, we wish not to discourage its use. It comes to us too strongly recommended to be hastily abandoned, and, at all events, is one of the means by which the disease may be mitigated or suspended. But whatever may be its utility, we believe it to be less than that of the sulphate of copper, which we value very highly. It is presumeable that arsenic, from its known properties, might be useful in this disease. But we have not found it so, and excepting the single attestation of a late writer, its efficacy is without support. To the powers of the *elutriated oxid of tin*, much stronger evidence is borne. "It has," says Shearman, a respectable English physician, "more frequently succeeded in my hands in removing epilepsy, given in the dose of from two scruples to a drachm to an adult, night and morning for about four days, and then worked off by a purge, than any other remedy."*

We come now to the consideration of another description of remedies, namely, the narcotics and antispasmodics—as opium, the henbane, the hemlock, the nightshades, the digitalis, the stramonium, the camphor, assafœtida, musk, &c. Notwithstanding what has been affirmed at different times, of their powers, the only two of these articles which retain sufficient reputation to be noticed, are the digitalis, and the stramonium. The former is mentioned with great

* Lond. Med. Rep. vol. xviii. p. 190.

praise in a work upwards of a century old, Salmon's Botanologia, and more recently by Percival, and many others, though we apprehend, it must be deemed a very equivocal remedy. As to the latter, it would be easy to collect from the medical records of this country and Europe, a considerable number of cases of epilepsy, alleged to have been cured or palliated by its steady exhibition. The practice of our Hospital and Almshouse might afford some of these instances, as, at one period, it was a very common remedy in both of these institutions. No one, however, seems to have reposed such implicit confidence in it as Dr. Archer, of Maryland. In a communication on this subject, he does not hesitate to advance the opinion, that, "the stramonium, in regular epilepsy, is as efficacious as the Peruvian bark in intermittents." But other writers, as Greeding, Wahlbom, Wedenberg, and Lind of Europe, and Fisher and Barton of this country, give a much more temperate estimate of its properties. As the result of experience, they state, that it will often mitigate symptoms and sometimes even effect a cure. Our own observations of it will hardly enable us to go so far. The fact is, there is only one indication that the narcotics are capable of fulfilling in this disease, and which is, to allay excessive mobility of the system, without, however, conducing in any great degree, to the advancement of the cure. Considered merely as palliatives, they may occasionally be interposed advantageously, as auxiliary, or subordinate measures, to the general plan of treatment.

The most diffusible of the stimuli, as cantharides, the phosphorus, and spirit of turpentine, have been prescribed in this disease, and some of them usefully. It is stated by Johnson, that the first of these, freely given, by exciting an action in the urinary organs, seemed to relieve "the brain, on the well known principle of revulsion, and the paroxysms thereby moderated in force, and the intervals lengthened in duration." But further than this, he claims nothing for the remedy.* The use of phosphorus rests chiefly on the

* Treatise on Derangements of the Liver, p. 105.

authority of Hufeland, who, however, does not advance sufficient evidence of its utility, to warrant, in our opinion, the employment of so dangerous a medicine.

Lately, much has been said in the English periodical journals of the efficacy of turpentine in epilepsy. Cases are recorded by several highly respectable practitioners, as Latham, Percival, Young and Lithgow, of cures by it. But they are not entitled to the credit of having first used it. Long before we had heard of these publications, it was prescribed by us in the practice of our Almshouse, and we distinctly recollect, on claiming the remedy, being told by one of our pupils, that it was greatly employed by some one of the physicians of Charleston. Whether it is of much use in epilepsy, our experience does not enable us to state positively.

This disease is sometimes excited by worms, and, in such cases, the turpentine might be useful, and has actually been found so, according to the reports abroad. Much too, is ascribed to its emmenagogue powers, and hence in uterine epilepsy, it is thought exceedingly efficacious.

Every other measure failing, we must resort to mercury, to be first tried as an alterative, and this not succeeding, to the extent of salivation gradually induced, and moderately kept up for a length of time. By its pervading revolutionary power, it sometimes subverts the disease, however deeply implanted, or confirmed, and seems nearly as well adapted to all the forms of epilepsy, whether seated in the brain, the primæ viæ, or the uterus. It was probably first employed by Willis, who thought favourably of it, and it is admitted by Cullen and Tissot to have effected cures directed for the relief of other diseases, particularly syphilis, connected with epilepsy. By Housset, a French writer, it is pronounced to be the "most prompt, active and certain of all our remedies in the idiopathic disease," a distinction which we suspect to be unfounded. It is indeed to be presumed, from its ordinary effects, that the reverse is true, or that it would be rather more effectual in correcting the vitiated state of the chylopoietic viscera, or

in removing the obstruction of the catamenia, from which secondary epilepsy so often proceeds. Latterly in Europe, it has on the whole, lost confidence, and we hear little of it. But in the practice of this city, it is frequently prescribed, and is viewed as one of our best resources in the disease. With this, we complete the account of the internal remedies in epilepsy. But there are some external means claiming our attention, among which, are the vesicatories, setons and issues. These are very important measures, from which, immense benefit sometimes occurs. As to the place of application, it depends on the nature of the case, and the design we may have in view. In cerebral epilepsy, a perpetual blister on the nape of the neck, or on the scalp—or an issue in the ordinary way, or by the tartar emetic plaster over the fontenelles is demanded, or where we wish a revulsion, blisters may be kept on the lower exremities. The spinal marrow being suspected as the seat of the disease, these applications are to be made over it, and in some instances, the entire vertebral column has been vesicated by a strip of the epispastic-plaster, with good effect.

Caused by uterine disturbance, and especially if there exists much spasmodic irritation, a blister to the lumbar region, or on the inside of each thigh, has proved highly serviceable. As substitutes in the two former cases, moxa and the actual cautery are strongly urged, and greatly practised by Gondret, Percy, Portal, Thenard, and other French physicians. They are obsolete expedients revived, which promise no such superiority as to entitle them to a preference.

The disease being occasioned by repelled eruptions, or by suppressed discharges, these we are to restore, or to establish a vicarious drain by some of the above means, or, as regards the case of eruptions, by frictions to the formerly affected part, with the antimonial ointment, or by a liniment made with one ounce of the liquid ammonia, to two ounces of olive oil or lard.*

Excited by any local irritation of a nerve, such irritation is

* Cooke, p. 203.

to be removed. It sometimes proceeds from small tumours, or worty indurations, or exostoses, or spiculæ of bone, to be readily managed by a surgical operation. But, in other instances, the source of irritation is hidden, and here the application of caustic to the part, or repetition of blistering, becomes proper. Cases dependent on local irritation, have been repeatedly cured in this way.

Galvanism is added to the remedies in epilepsy. The German practitioners first attempted it, without, however, doing more with it, than as a palliative. But Mansford, an English surgeon, assures us, that he has used it several times with complete success. Entertaining the notion, that the disease consists in an accumulation of electrical matter in the brain, "excessive with respect to its existing capacity," he directs that "a negative point should be established as near the brain as possible, and a positive one in some distant part of the body, to preserve these opposite states, and to be kept constantly in action."† To the occasional and forcible application of galvanism, as ordinarily practised, he objects as nugatory or hurtful, and proposes his own process merely as auxiliary, by no means wishing to exclude other remedies.

Early in this discussion, it was stated, that the paroxysm of epilepsy is, for the most part, preceded by certain signs. Being thus admonished of its approach, we should, if possible, ward off the attack. It is occasionally announced by the aura epileptica, and when this commences at a point remote from the brain, intermediate pressure on the nerve by the tourniquet or ligature, or by the hand, will often succeed. But under other circumstances, having enjoined the utmost composure at the anticipated period, it may be better secured by a dose of opium. This is highly extolled by Fraser, a late writer, who seems to claim it as a discovery. But it is an old remedy which we have often employed. It was given with ample success by Darwin, in two cases where the fits came on regularly every night, and exactly such an

† Mansford on Epilepsy, p. 81.

instance is recorded by De Haen, relieved by the exhibition of an opiate at bed time. Emetics we have resorted to with a similar view, and did believe that the measure was original with ourselves. But there is an allusion to it in Aretæus, and it is expressly recommmended in Thompson's Practice of Physic.* Generally they are effectual, and even where they do not obviate the paroxysm, render it milder and of shorter duration. Yet, it must not be concealed, that they are sometimes mischievous. We have known them more than once to bring on the fit, and with aggravation, and on the whole, we are inclined to suspect, that they are only suited to gastric epilepsy.

In conclusion, we have only one word to say as regards the regimen. It has already been intimated, that in the excited states of the system, the diet should be as low and abstemious as possible, consisting literally of bread and water, and even this in a limited quantity. No one who has not tried it, can form an estimate of the importance of such a course of living in the management of this disease. It is in reality a *sine qua non*, without which, all our efforts will prove nugatory. But under other circumstances, or where we are endeavouring to restore tone to the system, it must be accommodated accordingly, though even here, it should be carefully regulated both as to the quality and quantity, excluding all articles of an indigestible or stimulating nature. Nor does our duty cease at this point. As much as in any case whatever, the predisposition continues in epilepsy, and hence the utmost circumspection is demanded in the avoidance of all the exciting causes—in the interruption of every morbid association—and as far as may be attainable, in the preservation of corporeal and mental quietude, till the habit of the disease is worn away and extinguished.

* Page 334.

ART. XIV. *Elements of the Etiology and Philosophy of Epidemics.* By JOSEPH MATHER SMITH, M. D. Fellow of the College of Physicians and Surgeons of the University of the State of New York, of the Physico-Medical Society of New York, &c. New York. J. & J. Harper, 1824.

IT was long since emphatically stated, that fevers constitute the great outlets of human life—and notwithstanding the great labour and research which have been so liberally bestowed on the investigation of their causes and nature, the peculiar character of the subject has rendered the progress of our knowledge much less rapid than that in the other departments of natural science. The attempts which have been made to reduce the laws of epidemics to a system have generally proved abortive,by partial views or limited information of the subject—attachment to the settled dogmas of the schools—respect for venerable authorities—or the determination to coerce all the facts that could be collected to support some theory, preconceived and established in the mind of the author. That systems in almost every branch of philosophy have been laid in ruins by the same causes, we need scarcely remark; and that every theory in our own science not based upon the true principles of inductive philosophy and analytical reasoning must share a similar fate, is equally certain.

It was once the fashion in medicine to treat every thing like a systematic arrangement of diseases and their causes as chimerical and absurd; it was, in the figurative language of a late distinguished and speculative professor, as impossible to define the exact boundaries and limitations of a disease, as to take the dimensions of a cloud on a windy day. Whatever might have been the injury that could result to individuals and to society from the stupid blindness of any man,

who is there that would prescribe for the *name* of a disease, and not for the assemblage of symptoms presented to him in the deranged functions of the living body? We venture to assert, that society has sustained a much greater injury from the looseness and irregularity introduced into medical reasoning, by the anathemas heaped upon the hydra-head of nosology, and the eulogies so lavishly bestowed upon the doctrine of the unity of disease. No man more highly estimates the genius and character of the celebrated RUSH than ourselves; and we disclaim any of that feeling which has frequently dictated a wanton attack upon his fame and medical opinions. But no man of genius is free from faults, and his were exclusively the errors of a towering intellect. The systems which have been introduced into almost every branch of natural science, facilitate their acquisition, and enable the student to make a practical application of their principles without difficulty. Facts, doubtless, put us in possession of power; but until they are reduced to order and arrangement, we are unable to apply them to the greatest advantage to the production of effects to which they are fully equal under the governance of a system.

The work of Dr. SMITH, though strictly elementary, contains, in our judgment, a more scientific exposition of this interesting and important subject, than any which has come within the range of our observation. Pursuing an analytical course of investigation, Dr. SMITH has reduced the causes which produce and sustain epidemics to a system, which recommends itself to our attention both by its plausibility and simplicity. The difficulties of such a task can only be properly appreciated by those who have witnessed the ravages of disease in different seasons—watched the progress of epidemics from district to district—and observed the influence which they exert over the ordinary diseases of the season.

The anomalous and compound cases arising from the operation of these combined causes, together with the apparent contagiousness of some diseases, have hitherto baffled

the efforts of the nosologists, and divided for centuries the opinions of the medical world.

"The difficulties," to quote the language of the author, "attending etiological inquiries are confessedly numerous and peculiar. Of many of the remote causes of disease, we have no other knowledge than what is derived from the observation of their effects. This remark is particularly applicable to those epidemic influences which occasionally operate with desolating fury on communities and nations. To the inherent obscurities of the subject, therefore, may in part be ascribed the tardy advancement of etiology, as well as the various and contradictory opinions which have prevailed with respect to the causes of particular diseases. In many instances, the most ingenious inquirers have been led to false conclusions, by reasoning from facts presented to them under delusive circumstances. These observations are abundantly verified in the history of medical opinions."

Since the earliest periods of medical history, physicians have been able to trace diseases to their proper causes; although we must admit this fact, yet the barrier which existed to retard the progress of knowledge was, that the medical men of different ages confined their attention to different influences, overlooking or disregarding others, which were, perhaps, equally efficient, and the knowledge of which was absolutely essential to the satisfactory solution of the problem.

Some, in their terrified imaginations, have seen contagion present its horrid front in almost every malady which invades the dwellings of man. While others, as the great Sydenham, have attributed to the occult properties of the atmosphere, the production of epidemic diseases. The medical philosophers who have flourished subsequently to this distinguished man, have discarded his speculations as fanciful and absurd; while they have pertinaciously stamped as contagious many diseases perfectly incapable of reproducing themselves, and have sought in the different degress of atmospheric heat and moisture, and the exhalations from decomposing animal and vegetable re-

mains, the causes which have occasionally desolated the earth with pestilence. Time, which alone lifts the veil of the mysterious operations of nature, has proved that miasmata and atmospheric causes, all concur in producing disease—sometimes separately, and at others, uniting their deleterious influence to depopulate cities and ravage countries.

To collect the facts from the records of antiquity and the journals of modern times—upon these three different sources of diseases—to coerce them into some tangible shape and form, and to reconcile conflicting opinions, by detecting the errors of some, and displaying, more clearly, the correctness of others, has been the labour of Dr. Smith, in the work before us.

Before entering directly upon the consideration of our author's system, and the doctrines he has advanced to support his several positions, we would observe that one of the features which conspicuously distinguishes the science of the moderns from the ancients, is the introduction of precise and definite terms. It is not to be wondered at, that a branch of medical philosophy, heretofore composed of insulated facts, and random speculation, should have been deficient in one of the most important characteristics of systematic arrangement. These deficiences we think our author has happily supplied. Without encumbering his work with a long vocabulary of hard names, he has introduced words which convey a distinct and perfect idea to the mind.

Without such a language it is impossible either successfully to write, or advantageously to read upon a scientific subject. The words contagion and infection, were long used promiscuously by physicians, and even since the line of demarcation has been drawn between them by Dr. Bayley, of New-York, in 1796, medical men have been guilty of too much carelessness in their application. "But, (says our author) there are other and more extensive sources of disease, namely, the vicissitudes of atmospheric temperature, moisture, long continued heat and cold, and also those secret qualities

of the air denominated *epidemic constitutions*. These, with contagion and infection, embrace all the general and efficient causes of epidemic distempers. No term has hitherto been proposed to express the atmospheric causes of disease. An appropriate word for this purpose would obviously afford a definite means of abstraction and discrimination. We shall, therefore, attempt to supply this desideratum in medical nomenclature. As the words meteor, meteorology, and their derivatives, all have relation to the phenomena of the atmosphere, they naturally direct us to their etymology for the original of a term which may serve the purpose here contemplated. From the primitive μετεωρα is easily deduced the word *meteoration*, which appears well suited to designate the insalutary qualities of the atmosphere. By the terms contagion, infection, and meteoration, therefore, are to be understood three general sources of disease, each distinct and peculiar in its nature. These divisions may be considered as forming three natural orders, each of which we design to investigate and reduced into genera and species." In the completion of this arrangement, Dr. S. has availed himself of the labours of his predecessors so far as was compatible with the views he had taken of the subject.

The plan proposed by Dr. Hosack, in the classification of contagious diseases, he has made the foundation for the divisions of the first order.

The first order, *contagion*, is divided very naturally into two genera, comprising the diseases which are communicable by contact alone—as the itch, syphilis, frambœsia, vaccina, &c. These diseases, not being capable of propagation through the medium of the atmosphere, " they are contagious in the strict etymological sense of the term," and very properly form the first division in a systematic arrangement. The second order embraces those diseases which are communicable through the atmosphere, as well as by contact, such as small-pox, measles, chicken-pox, scarlet fever, &c.

Among the distinguishing features of these diseases are

their febrile character, and occasional prevalence as epidemics. This arrangement is certainly exceedingly simple—and, having been made at that period in the history of medicine, when the combined observations of centuries have been brought to elucidate the characters of some diseases, which were until lately, held as very doubtful—it is not likely that it will be liable to suffer much by the lapse of time.

Infection constitutes the second order in the arrangement. This undoubtedly embraces the most abundant sources of human maladies. In reducing this order into genera and species, Dr. Smith has pursued the only plan from which he could expect success, namely, that of acquiring an extensive knowledge of epidemics, as they have occurred in different ages and under every variety of climate. By learning the particular circumstances under which they have originated and been sustained—together with the peculiar type and symptoms, by which they were characterized.

By comparing them and the causes which gave rise to them, with each other, he has been able to ascertain their kindred points and also to show the lines and features by which they are to be distinguished—separated and arranged under different heads. Miasmata, or the exhalations from decomposing animal and vegetable substances have long been considered as the causes of intermittent, remittent, bilious fevers and dysenteries, and the belief in their poisonous properties and agency in the production of these diseases is now so universal that few pretend to be sceptical upon the subject. There is, however, an effluvia to which is attributed with equal confidence, the origin of the disease prevailing in the crowded, filthy, ill ventilated apartments of jails, hospitals, ships, &c. The diseases originating under these circumstances, are designated by the several appellations of jail, hospital, and ship fevers. But they are universally of the typhoid character, and in fact, they are the sources of genuine typhus. Our author is indebted to the late Dr. Miller, of New-York, for the two first genera of this order. In 1804, this latter gentleman, in "An at-

tempt to deduce a nomenclature of febrile desires from the origin of their remote causes," divided the miasmal poison into two species—the first composing the exhalations of the soil, the other the effluvia generated from public and domestic filth. These noxious principles he considered as *miasmatic atmospheres*. For the purpose of obtaining terms which should facilitate a scientific arrangement, he resorted to the Greek language, and chose the Greek adjective κοινος, *common* or *public*, to denote one species of miasmata, and ἰδιος, *personal* or *private* to denote the other. These terms are readily understood, and very definite and precise in the meaning they convey.

To the two first genera, therefore, he has given the appellations of koino miasmata, and idio miasmata. It will be seen at a glance, that the first order embraces the causes from which originate intermittent, remittent fevers, &c. or marsh effluvia—while the other is appropriated to designate the causes which give rise to typhus in its various characters, or the effluvia originating from confined and crowded apartments.

But diseases have frequently occurred of a compound or mixed kind, and evidently deriving their peculiar features from a combination of the two causes before mentioned. To prove this position, our author brings forward a number of instances that occurred in ancient and modern times—and concludes by considering this compound miasm as a febrific agent of great interest and importance—to which he has given the term idio-koino miasma, and which constitutes the third genus of the order infection.

To the action of this compound poison, our author attributes the fever of Bancker street, New York, in 1820. A disease which was emphatically styled genuine yellow fever by some of their physicians; while others as confidently asserted that it was typhus. This diversity of opinion evidently displayed that the nature and origin of the disease were alike, not understood.

The crowded and ill ventilated habitations of that section of the town generated *idio miasmata* while the sources of

koino miasmata were in active operation under the beams of a vertical sun—and in other parts of the town producing bilious fevers. From idio-koino miasmata, then, he infers that the disease originated—bearing as it did a compound character of bilious and typhoid symptoms.

"Upon a careful review of all the facts connected with this subject, we think we are warranted in concluding, that the fever of Bancker street was neither genuine typhus, nor bilious, remittent or yellow fever—but a distinct and compound fever; illustrative of what Dr. Miller considered the "interesting inquiry how far the different febrile poisons are susceptible of being blended, and thereby of producing disease of a mixed kind."

Our author proceeds to advance cases which he thinks support his views. Among others, the fever which prevailed in our Almshouse, in 1820, as described by Dr. Klapp—and also the fever which prevailed in 1821, which was principally confined to the African population of our city. In the formation of this genus Dr. S. has displayed much ingenuity, and so far as our limited observation of these diseases enable us to form an opinion, we are disposed to coincide with his views of the subject. That mixed diseases do frequently occur, is known to every physician, and this being the case with those which originate from miasmatic causes, we may very naturally conclude, that these causes are susceptible of combination in various proportions, producing diseases various and anomalous in their symptoms. We observe this to be the case in the succession of the seasons; the diseases of autumn, connected with those of the winter, forming what have been frequently termed *mongrel cases*.

The different grades of disease produced by miasmata generated under different circumstances render these genera easily reducible into species. In the formation of these species, our author has adopted the words used by the chemists to denote the highest and lowest degrees of oxidizement—*pro* and *per*. In the use of those terms, there appears to be no objection, as they are easily prefixed to the genera—

and are readily formed into adjectives as proto-koino miasmal, &c.

Proto-koino miasma, therefore, is the name chosen for the first genus. This includes all the miasmata generated from swamps, marshes, savannas, &c.

Perkoino miasma, designates the second species of this genus, "embraces the poisons of the *yellow fever* and *plague*, the malignant effluvia of Batavia and some other parts of the east." "It is distinguished from the species proto-koino miasma, by its more virulent and pestilential qualities, and by its occurring for the most part in cities."

Under the head of this species, our author touches upon the controverted point of the contagiousness of yellow fever. It is unnecessary for us to review his arguments upon this subject—they are such as have been frequently advanced, and are so perfectly rational, that as he observes, "this doctrine has but few advocates on this side of the Atlantic, and will no doubt soon be entirely exploded."

That the poison which produces yellow fever is both of domestic and foreign origin, is now very generally admitted. There is, however, a kind of half-way doctrine advocated by some very respectable physicians, which we have always viewed as hypothetical, and which we think our author has successfully combated. It is asserted by these gentlemen, that yellow fever never prevails in the middle latitudes, unless the miasm which generates it is imported from some foreign source—that when imported, it is multiplied and extended by an assimilative process, by which it converts *something* it meets with to its own nature—"what that something is they do not pretend to explain." This mode of reasoning savours too much of the ancient philosophy, when every difficulty was surmounted by an appeal to the imagination, and a principle was no sooner required, than it was obtained from this prolific source.

We shall extract a few of Dr. Smith's leading arguments upon this point.

"Does the exotic poison reproduce itself by acting as a fer-

ment? if so, there must be materials in the city in which it is introduced, of the proper kind to form that particular poison, otherwise it could not be multiplied by an assimilative fermentation. The truth of this proposition will not be questioned; and hence if it be granted that perkoino miasma originates in the West Indies and other tropical countries, it follows that the poison may appear *de novo* in the cities of the temperate zone, whenever circumstances occur corresponding with those in which it is generated within the tropics." "Now such a correspondence it is believed always happens, in the temperate latitudes where the yellow fever is epidemic." "It is correctly observed by Sir Gilbert Blane, that this fever is restricted to a certain range of atmospheric temperature, never having appeared on the continent of America, nor in Europe, except in seasons in which the heat of the air is permanently equal to that within the tropics, that is, about eighty degrees of Fahrenheit."

The nature of a Review is too limited to allow us to make long extracts: we deem the above sufficient to prove at least that the hypothesis is unfounded. Our author asserts perkoino miasma to be the cause also of the plague, and endeavours to point out the relationship between that disease and yellow fever.

The physicians on this side of the Atlantic can know nothing of plague, except through the reports of medical writers. There appears to be many points of resemblance, and we believe it is generally admitted that this disease arises from poison generated by decomposing masses of vegetable and animal remains. Dr. Armstrong, who wrote upon typhus fever, thinks he can perceive strong resemblances between that disease and plague. Dr. POTTER, of Baltimore, who added notes to his work, is decidedly of opinion that plague and yellow fever are kindred diseases.

To identify the origin and nature of these two diseases, is doubtless a very difficult task. We do not think the arguments of Dr. Smith are by any means conclusive. To arrive at the point desired, he has endeavoured to reconcile the opposite characteristics which these complaints exhibit in their origin and symptoms. But facts are wanting; when we reflect that there still prevails in this country,

where the yellow fever has so repeatedly presented itself for observation, a diversity of opinion upon some of its most important features—we need not wonder that it is difficult to identify it with another scourge, which, thank heaven! has never yet visited our shores. The second genus of the order infection next comes under consideration. The first species, denominated protidio miasma, includes the ordinary source of genuine typhus fever, according to our author's views and arrangements.

Human effluvia, generated by crowded and uncleanly apartments, are doubtless sources of typhus fever, and Dr. Smith considers miasmata of this kind as the only sources of this fever, strictly so called. Dr. Armstrong ranks the exhalations of the soil among the causes of typhus. That the diseases arising from the latter sources do frequently assume the typhoid character, there can be no doubt.

Our author observes—"The disorders originating from proto-koino miasma in their advanced stages, often resemble genuine typhus:" indeed, the low, or typhoid state of remittent fever, is doubtless occasioned in part by the morbid excretions of the patient reacting on his system. To this cause also may be partly ascribed the *typhoid* appearances, which are sometimes observed in atmospheric and contagious diseases, the nature of which is originally distinct from that of genuine typhus. The fevers originating from the causes which this species designates are of a mild character, and answer in general to Dr. Cullen's description of typhus mitior.

The second species, or peridio miasma, "has the same origin as protidio miasma, but is elaborated under circumstances calculated to increase the virulence of human effluvia to its greatest malignity."

It is admitted by all, that miasmata, from whatever cause it may arise, possesses different degrees of power, in proportion as it has been more or less concentrated or diluted. We can best judge of this by the violence of the diseases which come under our notice. Availing himself of these means, our author has formed the system which we have

thus far traced. The diseases arising from peridio miasma may be considered as synonymous to the typhus gravior of Cullen.

We now come to the division of the compound genus idio-koino miasma into species. From the nature of this genus, it may be divided into several species. "The mild or malignant species of the first genus may unite with the mild or malignant species of the second genus." "To make each of these combinations a species would be a useless refinement." This observation is certainly correct: for although diseases may originate from the peculiar combinations alluded to, yet it would be almost impossible to draw lines of distinction sufficiently strong to serve for the groundwork of a division.

Taking hold of the fact, therefore, that the milder species of idio miasma is more frequent in the summer than winter, for the obvious reason that ventilation prevents it from acquiring virulence; and this too being the season for koino miasma of every variety, he has divided the genus into the species protidio-koino miasma and peridio-koino miasma—the first compounded of the mild species of both human and marsh effluvia—the second of the malignant exhalations of the soil, and the mild species of human effluvia.

The peridio miasma so seldom occurs in the warm months, that it appears unnecessary to subdivide the genus any further. To the poison designated by the term protidio miasma, Dr. Smith attributes the Bancker street fever of New York, together with the diseases described by Drs. KLAPP and EMERSON. So far as we are able to speak from experience of the disease commonly denominated the yellow fever, we are disposed to coincide with these views as to its cause.

The singular fact that the negroes were more obnoxious to this species of effluvia than the whites, Dr. Smith deems worthy of particular investigation. This we are unable at the present time to give it: but there are some facts connected with the habits of the African that in part explain

their liability to this form of fever. As a people, they are poor, idle, filthy, and ignorant. The first circumstance is not altogether the effect of the second; they are compelled to remain so by the irresistible decree of prejudice, and the common consent of the American people. Their ignorance, too, has hitherto arisen from the operation of the same powerful causes. Living, therefore, in miserable hovels, and frequently upon food either unwholesome in quality or deficient in quantity—without any motives for cleanliness, they generate filth, which in its turn generates the deadly effluvia to which they often fall victims. Having no privileges as citizens, and every where considered as an inferior race, without hope to cheer or ambition to stimulate—their moral feelings are necessarily less acute and their attachment to life and its allurements so feeble, that the physician can hardly expect any co-operation of this powerful agent, with the remedies he may administer. In a highly civilized community every physician must have observed the resistance made to disease by the strong feelings which bind a man of cultivated mind to life, and attach him to his relatives, friends and avocations—all of these are nearly inoperative in the negro, or are very faintly exhibited. In addition, we know that a peculiarly offensive odour is secreted by the skin of the African which we may very reasonably conclude, will, especially when this secretion is vitiated, have the effect of hastening the operation of the cause producing idio miasma. We throw out these observations, though they are well known to those who have thought on the subject, as some elucidation of the peculiar liability of the negro to this form of disease, which has been considered as a singular fact. It may very fairly be doubted, whether they would suffer from such causes were their mental and corporeal condition equal to those of the white population.

Dr. Smith observes, "fevers of mixed characters are not unfrequently observed in the early part of the winter. The influence of proto-koino miasma on the system often continues for some time after the poison has ceased to exist.

Persons thus predisposed, when exposed to human effluvia generated in their own houses after the commencement of cold weather, or in hospitals or transport ships, will be liable to sicken with disease differing more or less from typhus on the one hand, and bilious remittent on the other."

Per-idio-koino miasma constitutes the second species of this genus—and "of all the infectious poisons this possesses the most terrific energy." It is formed by the combination of human effluvia with perkoino-miasma. The operation of this poison is confined to the limits of cities situated in those countries which are visited by plague and yellow fever—and to the poor and crowded habitations of such towns.

It usually happens, when a pestilence occurs in any of the United States, that it commences at the water's edge. The dwellings in this part of the town are frequently small and crowded; and the inhabitants are thus exposed to the poison which produces the epidemic, and that from the accumulation of human filth. "The pestilence which ravaged London in 1665, was called the "*poor's plague.* At this period, order was issued to shut up all the infected houses, to prevent the access of friends and the egress of those labouring under the disease. The consequences were as might have been predicted—68,000 died in the short space of a few months. Our author adduces the history of several pestilential epidemics to prove the existence and virulence of this compound miasm.

That a modification may be given to the usual symptoms of yellow fever by the generation of protidio miasma in a small unventilated room, we suppose none will doubt; and therefore we are prepared to approve this species, which forms the last, in the third genus, of the order infection.

The third order is *Meteoration.* Of the derivation of this term we have already spoken and given our author's reasons for proposing this new name. He has divided this order into two genera, founded upon the "*sensibility* and *insensbility*" of the human body to atmospheric impressions:

the sensible and occult properties of the air having long been considered as sources of disease.

Those variations and changes which diurnally and annually occur in our climate, are continually alluded to as the causes of catarrhs, pleurisies, rheumatisms, &c. and, therefore, to the first genus there can be no possible objection—as it embraces the diseases which originate from these vicissitudes of weather. In this genus our author has adverted to topics, with which every one is acquainted; and the effects of the causes which he mentions, are universally felt. He very properly observes, that "the climate of our country, in many parts, has evidently improved since its first settlement, and, as it will doubtless continue to improve, the duty of noting its progressive alterations will properly devolve upon those who are professionally engaged in observing and treating disease."

The second genus of this order includes those diseases which are epidemic, that do not appear to originate from any source which could generate miasmata, either idio or koino, nor from the sensible properties of the air, which are, perhaps, the same as existed in years characterized by general health.

Those properties of the atmosphere, which are inappreciable either by the senses or any philosophical instruments—and which, nevertheless, undoubtedly exist—were denominated by Sydenham, the *occult* properties—and from others received different names. "As they are principally operative in the production of epidemics, we shall distinguish them by the term epidemic meteoration."

Our author further observes, in favour of this name, that it is more restricted in its signification than many of the terms formerly employed. Hippocrates, Sydenham, and others, made use of terms in whch they included both the morbid and occult influences of the atmosphere and its miasmal contaminations. Our author touches upon the diseases which appear to originate from this source, and then passes on to the consideration of the causes which can thus

dispose the atmosphere to become the vehicle of sickness and death—influenza—pneumonia typhoides—the cholera of India—the noted English sweating sickness which appeared in 1483 and some others—he enumerates as diseases referable only to some constitutional derangement of the atmosphere—and so far as we are acquainted with these morbid affections, we agree with him, and always have attributed them to this cause.

The nature and origin of epidemic meteoration no research has been able to ascertain or elucidate. The various conjectures of the ancients about mineral and sulphureous exhalations from volcanoes, earthquakes, &c.—our author very justly deems chimerical—and which are obviously so, from the cause being totally inadequate to the effect. He has, however, undertaken to *conjecture* also, and though disposed to do it philosophically, yet it is all conjecture. He divides the constituents of the air into ponderable and imponderable—the former he supposes, from our knowledge of their nature and chemical properties, to be entirely capable of producing any such terrific consequences as epidemics. This may be all very well, but Dr. Armstrong who, no doubt, wishes *his conjectures* to pass for as much as those of any other man, supposes nitrogen to be the mighty spring of all epidemic meteoration.

Light, caloric, and electricity are the imponderable constituents of the atmosphere. These being essential in the air we breathe, our author concludes, that variations in their proportions will, doubtless, more or less affect the human body. To this there can be no objection. Light and heat are, however, soon discarded as being inadequate to the production of this morbific agent—and electricity, which now forms, with some philosophers, a convenient substitute for the phlogiston of Stahl and Priestly, is made to bear the burden of producing all human calamities.

The variety of diseases, and the obscurity of these changes in the air, which act as their remote causes, render a division of these genera into species, in the present state of our

knowledge, absolutely impossible, and our author has, therefore, not given any. He concludes his etiology of epidemics with a synopsis of the arrangement which exhibits his system at one view.

We have, perhaps, dwelt longer upon this part of the work than was necessary for the purpose of presenting a sketch of the plan, and the doctrines upon which the division was made into orders, genera, species, &c. But it was necessary to speak of the names which the author had selected individually; and the diseases classed under the different heads required also to be noticed. We have endeavoured, however, to give a fair and candid exposition of the author's views, and if we have erred, it was not from prejudice.

We shall now proceed to make a brief analysis of the inquiry into the philosophy of epidemics contained in the second part. The first chapter or essay in this division of the work is confined to a sketch of the different arrangements of other philosophers, and a comparison with his own. We shall therefore pass it over without further comment.

In the second and third sections there is some very ingenious reasoning upon the origin and nature of contagious and infectious diseases, and some views advanced of the manner in which epidemics modify each other, and the influence they exert over the ordinary diseases of the season. In the second section, the broad principle is laid down, that "epidemics which prevail together in the same place become involved in each other in the following order: if a *contagious* disorder prevail during an *infectious* epidemic, the latter will modify the character of the former, and in like manner, if a *meteoratious* epidemic occur, with either or both of the preceding diseases, it will assimilate them more or less to its own nature.

In the third section our author endeavours to prove the meteoratious origin of the pyrexious contagions. In our opinion he proves too much. He considers it impossible, from the specific nature of the small-pox, and its inca-

pacity of being diffused widely through the atmosphere, (as he states) that it can poison the air generally, and thereby exert any influence over infectious fevers. Nevertheless, he traces small-pox originally to the atmosphere or a meteoratious cause—as in the following sentence from the third section: "Believing that the origin of the contagious disorders in question cannot be ascribed to infectious miasms, and as there is no reason to suspect that they originate from internal causes, independently of external influences, we are inclined to *think* that *meteoration may and does*, at certain times, affect the human system in such away as to cause it to generate contagious poisons. In the production of these, however, *it is presumed*, that it considerably depends upon a peculiar condition and temperament of body, induced by mode of living, state of society, &c." He considers the miasmata which give rise to infectious diseases, as of chemical origin, and endeavours to draw a line of distinction between the operation of these causes, which he supposes act internally upon the body, and the meteoratious, or strictly atmospheric, which he supposes produce their effects upon the exterior of the system.

If the fact could be fully established, that contagious diseases originated from atmospheric causes, and non-contagious from the exhalations of the soil and human bodies, and that the one produced its effects by an internal, the other by an external operation, it would be very desirable. But of this we are by no means certain. It is as impossible for us to say that the subtile poison, generated wherever it may be, which produces small-pox, is not received into the lungs by breathing, or with the saliva into the stomach, as it is to say, that the poison of yellow fever is free from every control and modification of electricity, and is not acted upon by some of the aerial elements.

If electricity be the efficient agent in the atmosphere in producing meteoratious epidemics, electricity, too, exercises dominion over almost every chemical combination, and may also be the remote cause of those diseases which are non-contagious.

That diseases originate from the exhalations of the soil, and from the *occult properties* of the atmosphere, we are fully prepared to admit—indeed we have advocated the doctrine in this paper. But whether contagious diseases are caused exclusively by the one, and ordinary diseases solely by the other, remains, we think, to be proved. After this digression, we must return to examine the speculation relating to the dominion of some epidemic causes over others. If it be admitted, as it is by many, and Dr. Smith among the number, that small-pox has a meteoratious origin, then the question presents itself—how can variola be subject to the influence of those causes, which our author states, exert no control over diseases of this class?

This appears to be the principle of Dr. Smith's theory. He admits the origin of variola and several other contagious diseases to be atmospheric—and supposes that small-pox for instance, when once fully developed in the human frame, from this cause becomes like the gases, by the application of heat, placed beyond the sphere of action; and therefore incapable of exerting any control over miasmatic diorders; while the same constitution of the air continues to influence epidemic diseases, and those arising from vicissitudes of climate, by producing eruptions, various and anomalous. But admitting that variola when once fairly formed and producing itself by the action of the system, be incapable of modifying a prevailing infectious epidemic, according to the author's own doctrine, *that* case which resulted from atmospheric causes de novo, ought to possess the power of modifying, in case the person whom it attacked was previously affected with any disease of the climate or reigning epidemic. The eruptive diseases which usually accompany the exanthemata, and which proceed from a peculiar constitution of the atmosphere, that is necessary to render contagious diseases epidemic, our author distinguishes entirely from these latter complaints; he says they are not contagious, and do not protect the system from subsequent attacks, and therefore they possess the power of modifying other epidemics. Numerous examples of these anomalous

eruptions were presented to the physicians of Philadelphia, during the prevalence of the small-pox in 1823 and 1824.

That form of measles denominated rubecella or French measles, the Doctor believes proceeds from the same state of the air which generates genuine measles, and this meteoration under different circumstances of the system would create rubeola vera. This distinction appears to be well founded, and indeed the whole doctrine of the origin of contagious diseases, and the modifying influence of epidemics in the order he has arranged them, though we think liable to some objections, which we have stated, is exceedingly plausible, and supported by an ingenious series of arguments.

In the fourth section Dr. S. takes a view of the different varieties of epidemic meteoration, and of their laws and modus operandi.

He divides these meteorations into three kinds.

1st. Those which predispose the system of contagious diseases, and which favour their epidemic prevalence.

2d. Those favouring the prevalence of infectious epidemics.

3d. Those which of themselves are immediately productive of epidemics.

In this section meteoration is considered as essential to the prevalence of every epidemic disease.

We are almost all of us disposed to refer to some morbid condition of the air, those epidemics which we have felt in and near this city for the last three years, which have appeared in various other districts of country, free from marshes, and all the sources of paludal exhalations. What these constitutions of air owe their origin to, is impossible for us to determine; our author again adverts to electricity. It may be this all-powerful and all-pervading agent; but of this we have yet no unequivocal evidence. It may not exist in the air; it may be something which forms a distinct atmosphere of itself. He attributes the rapid decomposition of dead animal and vegetable matter in seasons of pestilence to this meteoration; which strongly predisposes

the human body to disease, and at the same time favours the generation of those miasmal poisons which so quickly prostrate the vital powers. He thinks the approach of a malignant epidemic may be apprehended by the meteorations cause, aggravating the ordinary diseases of the season, which precede the appearance of the pestilence.

When pestilential diseases suddenly disappear without frost or rain, it is owing to a change of the meteoration which produces the same effect in hot climates, as would be produced by reducing the thermometer to thirty-two degrees. He also thinks that the miasmal causes of yellow fever, plague, &c. may exist, and yet if no meteoration appear favourable to its prevalence, the disease will not be excited into action. We must confess ourselves sceptical upon this point; at least we regard it as a mere inference from analogy. It was before remarked by the author that yellow fever never appeared unless the temperature was equal to 80° of Fahrenheit, in any of the cities of the United States. Now we have no evidence that this disease occurs at a lower temperature than this, within our borders, but always in the majority of cases when the average of the thermometer was such as would ensure the generation of per-koino maisma. Another distinguishing feature of epidemic meteoration says Dr. S. " is to render th morbid diathesis of individuals alike throughout a whole community."

Possessing the controlling influence over diseases which these morbid conditions of the atmosphere unquestionably do, we may readily believe the doctrine, and indeed there is abundant evidence of the fact.

Our author has proceeded to draw a line of distinction between the influence of climate and locality, and epidemic meteoration. His views are extended, and we have nothing to object to them. There may be a possible danger of refining too much upon subjects of this kind, which from their impalpable nature, we can only reason upon and attempt to arrange in the most general manner.

The fifth section is confined to an inquiry whether epi-

demics occur in a determinate order. On this point, philosophers have differed in opinion, and we are fully disposed to agree with the author, that from the difficulties of the subject, we cannot, in the present state of this branch of medical philosophy, believe that they do. Time, however, may unfold to the diligent observer of nature facts of which the present age has no conception; her operations, so far as they have been duly ascertained, exhibit a harmonious series, and are governed by laws that are fixed and immutable. It is impossible for us to touch upon the arguments for or against the doctrine of succession in epidemics without advancing still farther beyond the limits of a review.

The sixth section embraces an inquiry how far epidemics are connected with extraordinary seasons, famine, unwholesome food, and diseases among brutes. Of this part of the subject we think Dr. S. has taken a very correct view. That famine, unwholesome food, &c. may be connected, and promote pestilential diseases, there can be no question; but with the author, we consider them more as subsidiary agents, than as the principal cause of the scourges. In cities, cut off by beleaguering armies from the supplies of food, an epidemic may prevail, resulting from *idio* and *idio-koino miasma*, engendered in crowded apartments, and attacking with violence their victims, rendered susceptible by the diminished action of the vital powers, resulting from scanty and unwholesome diet. But this case is different from the desolating diseases that ravage whole empires.

With regard to the inquiry, what effect have extraordinary seasons in promoting epidemics, our author, after showing that we cannot predict from the prevailing disease or weather of one season, what will be the epidemic or vicissitude of climate in another, very properly observes, "to render a prognostic worthy of confidence, it should be founded on principles which are uniform in their operation. Now none of the prognostics of pestilence are founded on such principles; for there are no phenomena in one season which are uniformly followed by peculiar phenomena in the succeeding one. Hitherto the predictions of philosophers,

so far as we are acquainted with them, have had an exclusive relation to the diseases which occur in one part of the year. They prognosticate from the weather of the winter and spring that pestilence will prevail in the following summer and autumn; but never undertake to predict the epidemics of winter by meteorological observation made in the preceding summer and autumn. If the latter is impossible, is not the former equally so?"

Adverting again to the famine and unwholesome food as causes of pestilence, we think the position may easily be maintained, that though the former frequently has accompanied epidemics, yet from a variety of circumstances it is to be considered more as the result of the same cause which brought the disease into action, than as itself a cause.

The vegetable kingdom depends, like the animal, upon the atmosphere for its health and the perfection of its fruits. Sometimes the same meteoration which favours the prevalence of disease, favours also the development and vigorous growth of vegetables; and thus, that which blights man's fairest hopes in one respect, bestows upon him the luxuries of life in abundance. The converse of this is also true. With respect to animals, the same position may be maintained; they occasionally suffer, in common with their master, man; at other times they alone feel the atmospheric poison; and again, the human race are the solitary victims of the invisible scourges. These views and facts, Dr. S. has advanced and supported in the same lucid and philosophical style which characterizes the whole work.

B. LS.

QUARTERLY PERISCOPE.

EUROPEAN INTELLIGENCE.

ANATOMY.

M. CRUVEILHIER *on the Anatomical Structure of the Trachea and Bronchia.* "Wherefore," says M. Cruveilhier, "are the cartilaginous rings of the trachea replaced behind by a membrane? It is, say some, in order to facilitate the dilatation of the œsophagus; but this opinion is evidently erroneous, because the trachea and œsophagus are moveable in all directions, and if the œsophagus could not dilate forwards, it might dilate itself in the direction of both its sides. The structure of the trachea of certain animals, as that of the bullock and sheep, proves moreover this fact. Indeed, it may be remarked, that the cartilaginous rings terminate behind in an acute angle, in the form of the hearts on playing cards, The membranous part exists *within* this angle, which is not very yielding, considering the thinness of the cartilages behind the membranous part. The structure of this membranous part essentially consists of transverse muscular fibres, the use of which is evidently to bring together the extremities of the rings, and consequently to diminish the diameter of the trachea. As a proof that such is their office, the extent of the membranous parts is according to the degree of constriction of the trachea requisite to the different modulations of voice. Man, in whom the voice presents so extensive a scale of tone, has a trachea with a large membranous part supplying the place where the cartilaginous rings terminate. In the bullock the rings terminate behind by two convex extremities, which are generally broader than in the rest of the cylinder. The membranous structure is placed within this posterior part of

the cylinder, nearly at the same relative distance from its anterior concavity, as in man. The portion of the rings prolonged behind the membranous part is much thinner and softer than that before it, so that they may be easily applied closely to each other, and thus permit the trachea to be narrowed, although much less than in man. Assuming the diameter of the trachea to be six, it may be constricted to four in man, and to five in the bullock.

"In attempting to determine the structure and uses of the longitudinal projecting lines, perceptible on the membranous portion of the trachea, I observed that these lines are formed of fasciculi of fibres, which I considered at first to be muscular, but which are evidently albugineous. These fibres line the whole cavity of the trachea, and are disposed in a uniform manner, on all the cartilaginous part, whilst they form small fasciculi towards the membranous portion, imparting to it greater solidity, and facilitating the transverse foldings of the mucous surface. This fibrous membrane, intimately united to the mucous tunic on one part, and to the cartilaginous rings on the other, forms, by becoming thicker, fibrous rings separating the cartilaginous rings, but occupying only their posterior or inner aspect, the rest of the interval between the cartilaginous rings being filled by a white adipose tissue, hitherto little little known, and which covers, anteriorly, another very thin layer of fibrous tissue, that appears to be the perichondrium, extended from the first to the last of these rings. This adipose tissue, which in animals occupies the same space, is placed behind the transverse membrane. The fibrous membrane lining the cavity of the trachea is very elastic, and imparts much solidity to it, especially in its divisions.

"*Structure of the Bronchiæ.*—The bronchiæ present the same structure as the trachea; but the bronchial ramifications offer some remarkable peculiarities. Here, indeed, there is more of the membranous part, but the cylindrical form is complete; the cartilaginous rings are replaced by segments of circles of several lines in breadth at their middle part, forming very nearly the third of the circumference of the cylinder. Each segment terminates in an elongated point, which is continuous with, or passes into fibrous tissue. Sometimes two adjoining rings are

united at their middle portions. The rings are so disposed, that the one glides within the other, and they move with so great facility, that a slight pressure of the fingers causes a diminution of one-half of the diameter of each cylinder. The albugineous longitudinal fibres, disposed in fasciculi, extend to the farthest extremities of the bronchial conduits, and support the fibro-cartilaginous segments: if this support is removed by dividing the fibres, the extremities of the segments project into the interior of the cylinder. A muscular membrane, consisting of circular fibres, also occupies the interior of the cylinders. May not this structure be viewed as a perfect apparatus of motion, and may it not be concluded that, were it possible for the eye to observe its operation during life, the bronchial conduits would be found to contract themselves to one-half of their diameter, or even nearly to their entire obliteration, when exposed to chemical or other physical influences of an irritating nature?

"*The Lungs.*—At the margin of each division, the cartilaginous segments of the bronchiæ assume a particular form, so that the two fibro-cartilaginous lamina unite in order to form a very acute angle; a confirmation the most suitable for dividing the inspired column of air. The fibro-cartilaginous plate which corresponds to the continuation of the bronchial conduit, is larger than that which belongs to the branch given off from it. The cartilaginous rings soon disappear; but this species of mechanism at the bronchial divisions continues to the entrance into a lobule. That part of the bronchial canal deprived of cartilaginous rings is very considerable, and is solely composed of the mucous membrane, of the fibrous fasciculi, and of circular muscular fibres. The bronchiæ and their divisions are united, by a loose laminar tissue, to the venous and arterial vessels, to the nerves, and to the pulmonary lobules belonging to these parts.

"On isolating the bronchial lobules in a small lung which I had submitted to a very fine injection, I had occasion to observe their relations, and to remark that those of the superfices come in contact at their adjoining margins, leaving also intervals between them, which are filled with other lobules. The lymphatic vessels are distributed in the cellular line interposed

between these lobules. The blood-vessels begin not to be superficial until at the part where the cartilaginous rings disappear, and then they assume the tortuous disposition observable in the extremities of all the vessels. Respiration, or rather its offices, seem to be executed as well in this situation as in the vesicles of the lobules. These lobules are composed of vessels excessively delicate and minutely divided, and sustained by a very fine laminar tissue. The pneumo-gastric nerves proceed exclusively to the muscular tunic."—*Anderson's Quarterly Journ. Jan.* 1825.

The long promised work of M. SERRES, on the Comparative Anatomy of the Brain in the four classes of Vertebrated Animals, has at length made its appearance.* In this work, a rapid sketch is given of the general laws of organization, principally in order to apply two favourite doctrines,—that of *symmetry*, as the principle of the development of double organs; and that of *conjunction*, as the principle of their re-union. After some consideration relative to the mode of development of the fundamental parts of the encephalon, in which we find nothing that has not been previously advanced by BLUMENBACH, MECKEL, and TIEDEMANN, in Germany, and M. GEOFFROY ST. HILAIRE in France, the author endeavours to determine the primitive state of the brain in all the classes. He finds the cerebro-spinal axis always constituted, in each of the classes, of four elementary parts,—namely, the spinal marrow; two rounded bulbs, corresponding to the tubercula quadrigemina; two bulbs anterior to these, which are the rudiments of the cerebral hemispheres; and two transverse plates, situated posteriorly, and which are the first vestiges of the cerebellum. If any cause should arrest the development of one or more of these parts, the encephalon may nevertheless be formed with the characters of the class which is inferior. So much for the identity of the composition of the brain in all the classes generally. The relative degrees of development of the different parts in each of the different classes, is thus stated:—

* *Anatomie comparée du Cerveau dans les quatre Classes d'Animaux Vertebrès, appliqué à la Physiologie et à la Pathologie du Systeme Nerveux.* Par E. R. SERRES, D. M. P.—Paris, 1824.

In *fishes*, the optic lobes are the predominating part; the cerebral hemispheres are very small; the olfactory lobe is very considerable; the cerebellum is moderately developed.

In *reptiles*, the optic lobes lose their influence; the cerebellum almost disappears; the hemipheres of the brain are much more developed than in fishes; whilst the optic thalamus is, in its turn, comparatively small.

In *birds*, the cerebellum is the predominant part; the optic lobes are diminished; the cerebral hemispheres are enlarged; while the optic thalami are almost lost.

In the *mammalia*, the cerebral hemispheres become, in their turn, the predominant organs; the cerebellum continues its transverse development; the tubercula quadrigemina are re-reduced to their smallest form.

The olfactory lobule experiences great variety, being very much developed where the hemispheres are small, while it diminishes, and almost disappears, in proportion as we advance from the ruminating to the carnivorous animals, and from the monkey tribe to man.

According to M. Serres, the proportion of white medullary matter increases with the increasing development of an organ; while the reverse holds good as it becomes diminished, the grey matter now in its turn predominating: hence he concludes, along with Dr. Gall, that the white matter is the principal seat of nervous agency.

The phenomena attending the development and complete formation of the encephalon, in the four classes of animals above alluded to, are minuteiy and elaborately considered. The principle on which the formation of the different parts of the nervous system depends, is to be found in the blood-vessels. First, says M. Serres, the arteries of the spinal marrow appear, then those of the brain, and lastly those of the cerebellum; this being the relative order in which the parts become developed. A remarkable phenomenon is presented in the opposite march of the cerebrum and cerebellum: it depends upon this, that the internal carotids, by the influence of which the hemispheres are developed, are directed from before backwards; while the vertebral arteries, which form the cerebellum, on the contrary, have their course from behind forwards. From an extensive examination of the phenomena in question, M. Serres concludes

that a relation always exists between the development of the arterial branches and of the corresponding parts of the encephalon; so that, according to this author, we ought to be able, on being made acquainted with the sanguiferous system in any animal, to deduce therefrom the condition of the nervous system,—or, at least, of the encephalon.—*London Med. and Phys. Journ. Jan.* 1825.

PHYSIOLOGY.

Dr. FRANCINI has performed a series of experimental investigations relative to Absorption, of which the following are the most important results:—1. That the lymphatic vessels of the intestines are those which absorb the chyle. 2. That it is not demonstrated that they absorb any other fluid in the intestinal cavity. 3. That there is no solid argument tending to prove that the lymphatics of other parts are absorbents. 4. That it is certain that the veins of the intestines, of the abdomen, and bronchiæ, absorb. 5. That experiment has not made it obvious whether the lymphatics or veins absorb the fluids existing in the cavities of the cellular tissue, &c. 6. That, from numerous experiments, both in the state of health and disease, it is probable that the absorption of fluids in the cavities is, in a great measure, performed by sanguiferous vessels.*

The Lymphatic System has likewise been the subject of study with M. LAUTH, who has favoured the world with an account of his investigations; and it is to the general results alone that we can afford space to draw the attention of our readers. They differ very essentially from those above mentioned, and are—1. That the lymphatics absorb. 2. That these vessels terminate partly in the veins, partly in the tissue of the different organs, and in the glands. 3. That there appears always to be certain substances in them, which are poured into the veins to be more speedily eliminated. 4. That nothing proves the absorption of veins; which, indeed, is contradicted by the idea we entertain o this class of vessels. M. Lauth likewise rejects the idea of any absorption by means of transudation by inorganic pores. It is proper to state, that this author defines a lymphatic to be any vessel arising from an open mouth, or extremity, terminating in a vein, and endowed with the power of absorbing.

* *Opuscol. Scient. di Bologna*, No. 1.

The subject of Generation has recently received considerable attention, if not much elucidation, from several physiologists. The observations to which we allude are principally directed to the spermatic animalcula. The existence of these is asserted, by M. St. Vincent, to admit of ready demonstration, by taking the testicle of an animal recently dead, and making a puncture in it; the semen oozes out, and a small portion of it is to be examined through a microscope. The animalcules are so numerous, that they scarcely have room to move; but, if the semen be diluted with water, they become separated, and are more easily subjected to scrutiny. Their resemblance to tadpoles is said to be striking. Various other particulars are detailed in the paper from which these remarks are taken.*

Messrs. Prevost and Dumas have likewise instituted experiments connected with this curious subject.† They deny the influence of the aura seminalis, deem the spermatic animalcula necessary, and hold that the semen must be actually introduced into the uterus in order to produce impregnation. If this be so, there are some anomalies to be explained.

The subject of Muscular Contraction has received some elucidation from the inquiries of M. Dutrochet.‡ These are chiefly of importance as tending to confirm those of MM. Prevost and Dumas, who found the contraction to be produced by a doubling or folding of the fibres upon each other. M. Dutrochet regards the movement observed in some vegetables to be effected in a similar manner.

Messrs. Prevost and Dumas, who are taking a distinguished part in the physiological inquiries of the day, have published an extended paper§ on the development of the Heart in the Fœtus, which is of interest, particularly with reference to the formation of blood, which they suppose is effected in the liver; thus agreeing in opinion with Mr. Edwards.

* *Journal de Physiologie.*

† *Dictionnaire de Medicine*, art. Generation.

‡ *Recherches sur la Structure interne des Organes des Animaux, et sur le Mecanisme de la Contraction Musculaire*; par M. Dutrochet. 1824.

§ *Observations sur le Developpement du Cœur dans le Fœtus*; par MM. Prevost and Dumas.—Bulletin des Sciences de la Soc. Phil. October and November.

SURGERY.

Mr. LIZARS's *attempt to extirpate the Ovarium.* "In the year 1821, I was requested by my friend Dr. Campbell, lecturer on midwifery, to visit a woman with an abdomen as large as if in the ninth month of gestation. On examination, the tumour occupied the whole abdominal cavity, and appeared to roll from side to side; the uterus per vaginam felt natural, and her catamenia had been regular, but caused excruciating pain when they occurred. She stated that she was twenty-seven years of age, had borne only one child, and in twelve months afterwards had a miscarriage; two or three months after which, towards the end of 1815, she became sensible of a considerable enlargement of her belly, that began on the left side, and which she attributed to several blows and kicks received from a brutal husband, from whom she was now separated; that her neighbours now abused her, and made such complaints to her employers, that they dismissed her. At that time she earned, and now earns, her livelihood by binding shoes. Being now without the means of support, she applied to a county hospital, but was in a few days dismissed, on the supposition of being with child. She then consulted a number of respectable practitioners, but all of them cruelly taunted her with being pregnant. At the end of two years, she perceived a small moveable swelling in her left groin, which she allowed to increase for twelve months, when she came to Edinburgh, and, on consulting a surgeon, he opened it with a lancet, and discharged a large quantity of thin matter. On examination, this was a lumbar abscess, which she ascribed to a fall on her back three years previously. The evacuation of this fluid did not in the least diminish the magnitude of the abdomen; and she imagined she could distinguish between the pain of the lumbar abscess and that of the tumour in the abdomen. She was admitted into the hospital of this place, and remained for thirteen weeks, without receiving any relief. She consulted the chief medical gentlemen of this city, many of whom pronounced her pregnant, and all of them tried to dissuade her from an operation. Two put her under different courses of mercury; and, after a consultation, one punctured the abdomen for dropsy of the ovarium.

"Before having recourse to the operation of gastrotomy, I

deemed it my duty to have the opinion of the principal practitioners of this city, either by personal consultation, or by sending the patient to them. The woman herself also had previously waited on many of them. Some said, that to operate would be rash; others, that I would kill my patient. It was agreed by all, that there was a disease of one or both ovaries; and she had been twice tapped for dropsy of the left ovary, the result of a former consultation of some of the ablest medical men of this city. Convinced, from the history of the disease in the records of medicine, and from gastrotomy having been successfully performed for volvulus, and from the Cæsarian section, that there was little to apprehend either from loss of blood or peritoneal inflammation, I felt desirous to endeavour to relieve the woman by an operation; but was anxious to have the sanction of some other surgeon or physician besides my friend, Dr. Campbell, who at once offered to assist me. All whom I took to see the patient, and all to whom I sent her, said that the disease was an affection of the ovarium; but all of them condemned an operation. My patient, therefore, abandoned to her gloomy condition, called on me repeatedly, urging me to try the operation, otherwise she would do it herself. At last, as her pain became perfectly intolerable, and she was still urgent, I resolved to operate. During the preceding period, I had directed my attention to the lumbar abscess, and applied caustic, eschar after eschar.

"Wednesday, 24th October, 1823, was the day appointed for the operation; therefore, on the day preceding, she took a dose of the compound powder of jalap, which operated also on Wednesday morning, so as to preclude the necessity of administering an enema; she also made water immediately before, in order to empty the bladder. The emptying of the rectum by a glister, and the drawing off the urine, or taking care that the patient makes water, are circumstances of some consequence to be attended to, in all operations of the abdominal cavity. As inflammation appears to be induced generally by exposure to cold, and as these cases succeded so well in America, I desired the room to be heated to 80° Fahrenheit. When the temperature of the room had arrived at this heat, I placed the patient on a table covered with a mattress, and two pillows supporting her head, and commenced the operation, in the presence

of Dr. Campbell, Dr. Vallange, late surgeon of the 33d regiment, Mr. Bourchier, surgeon of the 36th regiment, and several other medical gentlemen, by making a longitudinal incision, parallel with and on the left side of the linea alba, about two inches from the ensiform cartilage, to the crista of the os pubis, through the skin and cellubar substance, when the peritoneum appeared, the recti muscles being separated by the distention consequent on the present disease and former pregnancy. I then made a small incision through the peritoneum, introduced a straight probe-pointed bistoury, and made a more extensive opening, into which I inserted the fore and middle fingers of the left hand, so as to direct the instrument, and to protect the viscera. With this instrument I made the internal to correspond with the external incision; while my friend Dr. Campbell, who assisted me, endeavoured, but in vain, to confine the intestines within the abdominal parietes. Apprehensive of peritoneal inflammation, of which many said my patient would die, I enveloped the intestines in a towel dipped in water about 98°. I now proceeded to examine the state of the tumour, when, to my astonishment, I could find none. I next requested Drs. Campbell, Vallange, and Bourchier, to make themselves satisfied that there was no tumour; when Dr. Vallange observed, that he felt a tumefaction on the left side of the pelvis. This, on investigation, was found to be a flattened tumour of no great magnitude, at the left sacro-iliac synchondrosis of the pelvis, lying beneath the division of the common iliac artery into its external and internal branches. Having satisfied all present that this was not the tumour which was anticipated,—that it was impracticable to extirpate it,—and that the uterus and ovaria were perfectly sound and healthy, I proceeded to return the intestines, and to stitch up the wound, carrying the needle as deep as possible, and applying straps of adhesive plaster between the stitches. Compresses of lint were next laid along, and the nine-tailed bandage bound round the body. I then carried her to bed, and gave her an anodyne draught of forty drops of laudanum, which was almost immediately rejected. Ordered her warm toast-water and tea.

"When the intestines protruded, and baffled all the efforts of Dr. Campbell and the other gentlemen to confine them, I shall never forget the countenances of my pupils and the younger

members of the profession. This fact of the intestines being forced out, proves, along with others, that the lungs can be expanded, although atmospheric air be admitted into the abdominal cavity: the diaphragm acted with great vigour, and with powerful impetuosity. The operation was performed at one o'clock of the day, and by seven in the evening she had vomited twice; had flying pains in the abdomen, a little hurried breathing, pulse at 100, and some thirst: she also felt uneasiness from inability to void her urine, which was drawn off by the catheter; and, as a precaution, I bled her to syncope, which occurred when eleven ounces were abstracted. She lost little or no blood during the operation."

This woman perfectly recovered. Vomiting occurred for two or three days after the operation, attended with much pain in the abdomen and fever; but, by prompt and large bleedings, and a strictly antiphlogistic plan, these symptoms were subdued, and she now gains her livelihood as usual. *London Med. and Phys. Journ. Jan.* 1825.

PATHOLOGY.

Dr. SCOUTETTEN's *Pathological Anatomy of the Peritoneum, continued.* The lesions of the peritoneum resulting from chronic inflammation, are very various, depending upon the period of the disease and the constitution of the patient. After the inflammation has lasted from fifty to sixty days, the abdominal cavity is filled with a whitish effusion, occasionally resembling milk, with numerous adventitious membranes: if these be detached, the peritoneum underneath does not appear so vascular as in acute inflammation; sometimes, indeed, it has scarcely any red colour. In some instances, the intestines are entirely glued together; and very rarely is there effusion of serous fluid sufficient to distend the abdominal parietes. The omentum often becomes much thicker, and sometimes contains hydatids in its substance. In these forms of the complaint, but little pain is experienced, and pressure is borne without inconvenience; constipation is for the most part present, and a sense of weight in the abdomen. When the peritonitis has continued for a longer period, for example, for several months, disorganisations of a different kind are met with. The parietes of the abdomen are found glued to the intestines, uniting the omentum

between them. This last frequently descends as far as the pelvis, where it forms adhesions, and frequently has numerous tubercles studded over it. While these are only in the earliest stages of their development, they are indicated by small whitish points on the peritoneum, more sensible to the touch than to the sight. Now and then may be perceived blood-vessels much enlarged, and radiating in a very beautiful manner. The size of the tubercles often exceeds that of a pea: they increase in number and dimensions until they coalesce; they adhere so firmly to the peritoneum, that they can with difficulty be separated from it. At first they are of very firm consistence; but, in proportion as they increase, they become softer, till their composition resembles pus, when they can easily be detached from the membrane. After having become thus soft, they again begin to harden, and occasionally attain even a calcareous induration. The interval between these tubercles assumes a variety of appearances, its colour being red, bluish, or even black; the tubercles at the same time remaining white: along with this there is generally some, although but little effusion.

In other instances, where the disease has lasted some months, the abdomen is distended by the quantity of the serous effusion; the intestines being pushed back, and appearing as if clustered together upon the vertebræ. The peritoneum is thickened, and presents numerous red spots, apparently produced by extravasation of blood. Occasionally large spots of ecchymosis are found; and, in this case, furrows and erosions, of various dimensions, may be perceived. The fluid effused into the peritoneal cavity differs very essentially in different cases; sometimes it appears to consist almost entirely of blood, and constitutes the *hemorrhagic peritonitis:* this generally takes place suddenly, from the ulceration of some small blood-vessels. The symptoms accompanying this form of the disease are said, by Dr. Scoutetten, to be the supervention of acute pain in a case of peritonitis which has not previously been very painful, and, along with this, acceleration of the pulse and aggravation of the general symptoms; all which phenomena suddenly disappear, the pulse becomes weak and slow, the features collapsed, and the patient feels a pleasant degree of heat in the abdomen, as if it contained warm water. Dr. Scoutetten affirms that he has met with many such cases, and that dissection has always confirmed the diagnosis.

Besides the ecchymosis above mentioned, various colours are sometimes communicated to the peritoneum, by the transudation of blood or bile. When the latter is the cause, its production is favoured by certain circumstances: thus, it takes place more readily in those who have died of acute than chronic inflammation. The blood likewise may produce a stain upon the peritoneum. Dr. Scoutetten mentions the case of a man who had thrown himself from a window, in whom nearly the whole of the serous membrane of the abdomen was red. The appearance was at first regarded as inflammatory; but more close examination led to the detection of a rupture of the spleen, from the effusion caused by which the red dye had arisen.

Gases are certainly very rarely contained in the peritoneal cavity, although some instances of this kind are recorded on good authority.* Dr. Scoutetten thinks he has once seen air contained in the peritoneum, without any organic lesion.

The fluids, independent of the effusions above alluded to, which it is said have been found in the abdomen, are bile, urine, chyle, pus, and the liquor amnii.† *London Med. and Phys. Journ, Jan.* 1825.

Two Cases of Dyspnœa terminating fatally. By M. Andral, Junior.‡—*Case* 1. A baker, aged twenty, of strong constitution, who had been only two months in Paris, and had had a slight diarrhœa for five or six weeks, presented, on the 10th of April, and three succeeding days, all the precursory symptoms of measles, such as redness of the eyes, flow of tears, coryza, &c. On the 14th the eruption appeared, and the patient took to his bed. On the 15th it covered all the body, and in the evening the patient entered the Hospital. The eruption was then confluent, and well characterized; the pulse quick and hard; the lips and tongue red; cough considerable; the symptoms not alarming. About the middle of the night the patient suddenly became oppressed; this oppression rapidly increased; and on the 16th, he was in a state almost amounting to asphyxia; his eyes prominent; face purple; respiration short and quick, and executed both by the diaphragm and the ribs; cough almost

* M. Portal, *Anat. Med.* tom v.

† *Archiv. de Medecine*, August 1824.

‡ Revue Medicale, Sept. 1824.

constant, with scanty mucous expectoration. The chest sounded well every where; mucous rattling was discovered in several points, by means of auscultation. The only traces of the eruption were some faint patches. The pulse remained quick and hard, and the tongue red. Twenty leeches were applied to each side of the chest, and ten to the epigastrium. A blister was afterwards put upon each leg, and the skin rubbed with a liniment of ammonia. Internally, ptisans. This treatment produced decided relief. In the evening, respiration was much more free, and the cough less frequent; the tongue was not so red; the eruption had not returned. On the 17th, the symptoms were only those of severe bronchitis, with fever. Respiration was but little quickened. 18th, the fever was trifling, and the opacity of the sputa indicated the speedy termination of the bronchitis. Suddenly, in the evening, respiration again became very difficult. Venesection to ℥xij. On the following morning the dyspnœa still remained considerable; the frequency of the pulse had increased. Two blisters to the thighs. During the day, the state of suffocation continued to increase. On the 20th, lividity of the face; purple hue of the lips; appearance of one dying with aneurism of the heart. Death soon after the visit.

Dissection.—The mucous membrane of the larynx, trachea, and bronchia, even to the smallest division, was intensely red. In some points of the primary divisions of the bronchia were a few white, membranous concretions like those of croup. The lungs were healthy, and crepitated throughout; loaded with blood at the back part. The heart healthy, with dark black coagula in the cavities of the right side; the stomach and small intestine pale; the lower part of the latter containing many lumbrici. The cœcum contained some thread worms; near the valve its mucous membrane presented a red patch, with three or four little conical excrescences; the rest of the intestine pale, and filled with fluid fæces. The liver loaded with blood; the spleen large and firm; much serum effused under the arachnoid membrane; the brain not injected; the lateral ventricles, particularly the right, distended by much clear serum.

Case 2.—A man, aged forty, had long had a very large ulcer on the left leg; the leg and foot below were prodigiously swelled, and hard as a stone; the skin covering them of a dirty grey

colour. The surface of the ulcer habitually discharged a considerable quantity of matter; for five or six months the patient had also had a cough, loose, and without dyspnœa, or pain in the chest. He was about to be transferred to the surgical from the medical ward, where he had, by mistake, been placed on his admission, when he was suddenly attacked with extreme difficulty of respiration, the secretion from the ulcer being at the same time much lessened. The patient, sitting up in a state of extreme anxiety, begged, in a broken voice, to be relieved from an enormous load upon his chest, which was stifling him; his inspirations were short, quick, and occasionally convulsive. The pulse was moderately frequent, and easily compressible. No cause for these formidable accidents could be detected in the state of the heart and lungs. The chest sounded naturally, except at the back part of the left side, for the space of some inches: and except this same place, were respiration was weak and rattling, the air freely entered the air-cells. The dyspnœa, the cause of which was thus so perfectly unknown, increased at every moment. Bleeding, blisters, &c., produced no relief. On the following day, the difficulty of respiration was so great as to threaten asphyxia. It was suggested that the cause might be in the larynx, and that the case offered some analogy to the œdema of the glottis. Tracheotomy was proposed as the only resource. M. Roux performed it: all precaution was taken that the air should have a free passage through the opening in the trachea, but the operation was not followed by any amendment. The oppression continued to increase, and in the evening the patient died.

Dissection.—The lungs were healthy and crepitated, except on the left side, in a space amounting to about one-tenth of the posterior lobe. The mucous membrane was red in patches of small extent. The heart and great vessels healthy. In the leg, great induration of the cellular tissue, with necrosis of the tibia. *Anderson's Quarterly Journ. Jan.* 1825.

Observations on Obliteration of the Biliary Ducts. By M. Andral, Jun.* Obliteration, complete or imperfect, temporary or permanent, of the passages to the mucous surface, have been

* Collected at the Hospital of *La Charité*, in the wards of M. Lerminier.

referred to four principal causes. These are—1st. obstruction of their cavity by a foreign body; 2d. compression of their parietes by membranous fibres or tumours of various kinds; 3d. spasmodic contraction, independently of inflammation; 4th. an inflammatory action, giving rise to congestion and thickening of their mucous surface, as also of the subjacent structures, &c. If we examine the influence of these different sets of causes on the obliteration of the biliary ducts, we shall find that it is frequently produced by the two first; that, in the great majority of cases, the third has been rather supposed than demonstrated; and that the fourth has hitherto attracted but little attention from Physicians. Authors who have noticed it have established its existence *à priori*, rather than shown it from anatomical inspection. The following observations are published with a view to supply this defect. Several *icteri*, generally attributed to spasm of the biliary passages, seem to us rather to be caused by inflammation, more or less intense, of their mucous membrane. Thence arise congestion and obliteration of the canal, more or less complete. The same is observed elsewhere, in all narrow ducts which may be the seat of inflammation. This obliteration may be but temporary, if the congestion causing it be quickly removed. It may remain long, and become even permanent, when the inflammation passes into the chronic state.

CASE I. *Icterus, with Pain and Tumefaction in the Right Hypochondrium, Obliteration of the Ductus Choledochus, Rupture of the Ductus Hepaticus, and Peritonitis.*--A shoemaker, aged thirty-five, entered the hospital (*La Charité*) November the 8th, 1821. Six days previous, after a debauch, he was seized with a considerable pain in the right of the epigastrium, a little below the edge of the ribs. In the morning ensuing he discovered himself to be yellow. On the 9th (the seventh day) he presented the following appearances:—a yellow tint on the conjunctiva and the whole surface of the skin; an obtuse pain in the right hypochondrium; below the anterior extremity of the eleventh rib a pearl shaped tumour is perceptible, moveable under the finger, and indolent, its large extremity extending a little beyond the level of the umbilicus, and the small losing itself behind the ribs. Tongue natural; thirst considerable; no appetite; stools scanty and colourless; pulse frequent; skin hot and dry. We considered the tumour of the side to be produced by

the gall-bladder filled with bile. (*Leeches to the anus; whey, with acetate of potass; diet.*) During the four following days the tumour augmented; but no other change took place. In the course of the 13th of November (eleven days from the occurrence of the pain), the patient was suddenly seized with a more acute pain, which, arising in the region of the liver, soon spread over the whole of the abdomen. Upon seeing him next morning, we found the pain continuing: its extreme acuteness, and its augmentation on the slightest pressure, satisfactorily showed that it was caused by a peritoneal inflammation. At the same time the countenance was pale, collapsed, and greatly altered, with general anxiety in the highest degree; pulse small and very quick; extremities cold. (*Two blisters to the legs, twenty leeches to the abdomen.*) Died in the afternoon.

Dissection—The peritoneum was filled with a purulent liquid, whose tint, generally yellow, was more so in the right side. The internal surface of the duodenum was intensely red. The opening of the choledic canal, which is, in general, not discoverable without some search, was marked by a small roundish tumour, pierced in the centre with a sort of capillary orifice, not more than a line wide, and elevated about three lines above the level of the intestinal surface. A very fine probe, introduced by the opening of this tumour, at first pointed out no cavity; but, on being pushed with force, it appeared to pass some obstacle and entered the choledic canal, which it traversed throughout its entire length with difficulty, as if the ordinary passage were effaced, and the probe had in a manner re-established it, as it was pushed cautiously from the gut towards the liver. Upon making incisions, it, in fact, presented an almost imperceptible cavity; its parietes were considerably thickened; besides which, they were torn by the slightest force. On the other hand, the hepatic and cystic ducts were remarkably enlarged, as was also the gall-bladder. A little before the union of these ducts, a a perforation was found in the hepatic of an irregular round form, and large enough to admit a pea. Round this orifice the texture of the duct did not appear to be any way altered. The cause of the peritonitis was now evident. Nothing remarkable was detected in the structure of the liver. The stomach exhibited some red spots, the colour of which was in the mucous coat. The rest of the intestinal canal and the other organs appeared healthy.

Reflections.—There are few cases in which the symptoms observed during life, have so strict a relation to the lesions found in the body. In consequence of an irregularity in diet, inflammation took place in the stomach and duodenum; and while in the former of these organs, it was but slightly marked, it ran to a greater degree in the other. The irritation in the mucous coat of the duodenum was extended by continuity of structure to that which lines the ductus choledochus; in like manner as, in ophthalmia, inflammation involves the lachrymal ducts, and in urethritis, the seminiferous tubes. Thence arises congestion in the mucous membrane, obliteration of the passage of the ductus choledochus, and consequently an accumulation of bile in the gall-bladder, the formation of a tumour in the hypochondrium, probable absorption of a portion of bile, and the production of jaundice. With respect to the ductus hepaticus, the increased capacity which it presented, seems to prove that it had been greatly distended by bile. Was this distention carried far enough to cause the rupture of its coats? It may be supposed so from their insignificant thickness. Another remarkable circumstance is, that the inflammation, very intense throughout the whole extent of the ductus communis, should have been confined to that passage, and that the hepatic and cystic canals were not at all involved in it. Other mucous surfaces likewise present frequent instances of inflammation, the seat of which, as in the present case, is rigidly circumscribed. Thus, in the majority of cases of gastritis the redness of the mucous coat terminates abruptly, in one place at the cardia and in another at the pylorus. Nor is it rare to find one side of the ileo-cœcal valve of a bright-red hue, and the other white. This change of colour takes place all at once. No intermediate tint separates the inflamed spot from the sound.

CASE II. *Icterus, with Tumefaction and Pain in the Right Hypochondrium—cured.*—A man about thirty years of age, for two days experienced a very acute pain in the right hypochondrium, at the end of which he became jaundiced. When he entered the hospital in the summer of 1824, the icterus and pain were still present. Immediately beneath the cartilaginous margin of the ribs, and a little within a straight line whose lower extremity may be supposed to correspond with the anterior and superior spine of the os ilium, a pyriform tumour was perceptible, moveable, extending about two fingers' breadth beyond the

edge of the ribs, and prolonged behind them. This tumour we conceived to be caused by the gall-bladder, enormously distended by a great quantity of bile. The pulse was frequent; the skin hot; obstinate constipation. (*Twenty Leeches to the anus; barley water; enema; pediluvium.*) On the morrow the fever was gone; during the three ensuing days the tumour first diminished, and then subsided entirely, along with the pain. The yellowness disappeared; the alvine evacuations returned; and the patient was speedily dismissed, doing well.

Reflections.—This case, compared with the preceding, affords the strictest analogy between the commencement of the disease and its symptoms. In the one and in the other, the right hypochondrium is first affected with pain; speedily it exhibits a circumscribed tumour, evidently formed by the gall-bladder; and at last jaundice, with fever, declares itself. In the first case the patient sinks under peritonitis, and an inflammatory congestion is discovered in the choledic canal, explaining all the derangements which took place prior to the peritoneal inflammation. In the second case the same derangements are promptly dissipated under the influence of antiphlogistics, and the patient is restored to health. The identity of the phenomena ought, in my opinion, to establish an identity of cause. In the second, as in the first, the pain and swelling of the hypochondrium, the icterus, the febrile action, appear to be properly referable to the inflammatory obliteration of the choledic canal. Being the result of acute inflammation, this obliteration is discussed as resolution takes place. Let us now proceed to cases where inflammation, become chronic, has occasioned a permanent obliteration.

Case III. *Icterus continuing for several Months, Obliteration of the Choledic and Cystic Canals; Rupture of the Gall-bladder; Superacute Peritonitis.*—A porter of the *Halle*, aged sixty-four, came into *La Charité* in the last fortnight of December, 1821. Three months before, he had, without any known cause, been seized with bilious vomitings, which lasted several days. They ceased spontaneously, but were succeeded by very copious diarrhœa, which continued about a month, and exhausted the patient. Towards the middle of September, the alvine flux abated, but he did not regain strength; the appetite was nearly extinct, and his food with difficulty digested. He then began to perceive that his eyes and the whole surface of the body were de-

cidedly yellow. In the mean time, although daily losing flesh and strength, he continued at his work, until about eight days of his admission to the hospital, at which time he was in the following state:—

The whole skin was of a greenish yellow; emaciation considerable; the tongue not much altered from the natural state; but there was complete anorexia, and the small quantity of food introduced into the stomach, caused a sensation of weight and heat in the epigastric region, which remained during several hours. The stools were rare, and of an ash-grey colour. The abdomen examined carefully, displayed no tumour, but was soft and indolent throughout. The pulse no way frequent in the mornings or throughout the day, was somewhat accelerated every evening. Leeches applied to the epigastrium, did not improve the digestive function; a blister applied in the same place had more effect. His sole nourishment consisted of milk and broths. About fifteen days after his admission, the state of his stomach seemed to be improved; the febrile accession in the evening was less marked, but icterus continued, and the strength did not return, while the emaciation increased. He was ordered barley water, whey, with the addition of cream of tartar, and pills of calomel and soap.

On placing him one morning in a sitting posture, he felt a sudden *tearing*, as he expressed it in the right hypochondrium. In a few minutes acute pain came on, first in the right loin, and then throughout the abdomen. On the morrow, he presented unequivocally, all the symptoms of acute peritonitis. The abrupt manner in which it came on, and the sensation of tearing so decidedly felt by the patient, led us to think that this peritonitis was caused by a perforation in the intestines. (*Thirty leeches were applied to the abdomen.*) During the day he sunk rapidly, and died in the course of the night.

Dissection.—A great quantity of liquid, of a dirty grey colour, and muddy-like, was effused in the peritoneum, which, in several places, was already covered with membranous concretions. The stomach and rest of the digestive tube, though carefully examined, displayed no perforation; but the gall-bladder, reduced to a very small capacity, and almost wasted, exhibited on its inferior surface, not far from the extremity, a hole about as large as a five-cent piece. The internal surface of the bladder presented

nothing remarkable; but its parietes appeared to us to be throughout extremely tender. In attempting to explore the cystic duct from the interior of the bladder, we could not get into it. Cutting then into the ductus choledochus, in order to approach in that direction, we found that the cavity of these two passages was become so small that the finest probe could not be passed. This nearly perfect obliteration was the result of considerable thickening of their coats. The hepatic duct, on the contrary, was much dilated and full of biliary calculi. No derangement was perceptible in the structure of the liver. The mucous membrane of the stomach, was considerably thickened throughout, of a slate grey colour, and as it were tuberculated. The subjacent cellular tissue, and muscular coat partook, in a remarkable degree, of this preternatural thickness. The slate colour of the stomach extended into the duodenum. The rest of the alimentary canal exhibited no material alteration, nor was any thing extraordinary observed in the remaining viscera of the three cavities, except a decided yellowness of the *dura mater*.

Reflections.—Here again an almost complete obliteration of part of the biliary ducts, was in all probability, produced by an inflammatory state of these cavities. As in the preceding cases, the disease first displayed itself in the form of a simple gastro-intestinal inflammation; in the same way, the inflammation extended quickly to the biliary ducts, and from their congestion arose icterus. So far, there is analogy between the three cases; but, in addition, the inflammation in the last case passed to the chronic state, and, after several months' duration, caused a thickening in the biliary passages, which, if the patient had lived a while longer, in all probability would have ended in perfect obliteration, and they would have been found in the state of a ligamentous cord—of which the next case furnishes an instance. The obliteration of the ductus cysticus explains how, in this case, the gall-bladder, instead of being distended and forming a tumour, was, on the contrary, contracted to a very small size. Its parietes rendered soft and tender, seemed to have partaken of the inflammation which attacked the cystic and choledic ducts; only the inflammatory action which had thickened and indurated *their* coats, softened these of the bladder. We need not be surprised at these opposite effects of inflammation in different portions of the same tissue: frequent exemplifications of

it occur in the mucous membranes. Thus, where the same inflammatory symptoms are present, we sometimes find the mucous coat of the stomach softened in such a manner, that it is nothing but an inorganic pulp; at others, again, it is thickened and hardened beyond its ordinary state: and in certain individuals these two morbid states are blended in different parts of the stomach. The rupture of the softened parietes of the gall-bladder belongs, therefore, to those cases in which perforations of the stomach or rupture of its coats are but the extreme degree of their softening. As to the sensation of *tearing* perceived by the patient, it has been experienced also by those in whom perforations of the stomach and urinary bladder have occurred. We have elsewhere given cases of this.*

CASE IV. *Old Icterus, with Ascites; Obliteration of the Choledic and Cystic Canals; Atrophy of the Liver.*—A man, aged fifty, came into the hospital about the beginning of December, 1820. During seven months he had been affected with jaundice. He assured us that he had never felt any pain in the abdomen: but for about three months there had been a tumefaction of that cavity. Upon examination, we found the whole skin, and also the conjunctiva of a yellow hue, inclining, in the face, to green. There was enormous ascites. The lower extremities were but slightly œdematous. The digestive functions were in no way impaired, except by an habitual defect of appetite and obstinate constipation; the stools were defective in consistence and quite colourless. The urine scanty and greenish. Complete apyrexia. The thoracic organs appeared to be sound. A slight impediment to respiration seemed to arise from pressure on the diaphragm, from the fluid contained in the peritoneum. We considered the ascites to depend on an affection of the liver. (*Tisans and diuretic drinks; pills of calomel and soap; frictions with tincture of digitalis on the limbs.*) No change took place during the next ten or twelve days; after which, the appearance of the countenance suddenly altered, and he sunk unexpectedly.

Dissection.—The contents of the cranium, in general, soft, as if soaked with serosity; in other respects no lesion. Thoracic organs quite sound. The peritoneum, filled with an enormous quantity of limpid serum, of a citron yellow colour, but without any indication of inflammation. The liver remarkably small, as

* Researches on the Pathological Anatomy of the Intestinal Canal.

if shriveled, and sufficiently of an olive grey colour; in other respects no perceptible deviation from the ordinary state. From the divided orifices of the biliary ducts, contained within the liver, flowed an abundant quantity of a fine green matter, resembling the resinous portion of the bile when separated from the other constituents of that fluid. The principal branches, which by their union form the hepatic canal, as well as the canal itself, were considerably dilated and formed with small coagula of a yellow substance, such as we obtain by treating the bile with nitric acid. The hepatic duct exhibited a similar dilatation as far as the point of junction with the cystic. This last canal, as also the choledic, throughout its whole extent, was transformed into a ligament, in which it was impossible, by the most careful examination, to discover even the remains of a cavity. The gall-bladder, greatly contracted, was modeled upon an irrregular concretion formed by hardened yellow matter. The spleen was very large. All the other organs, the intestinal tube in particular, appeared to be in their ordinary state.

Reflections.—In this case, the obliteration of a part of the biliary ducts was more complete than in the preceding. The cystic and choledic were mere ligaments without the vestige of a cavity. The etiology of this kind of obliteration is more obscure than that of the other cases; and it is merely by analogy that inflammation is admissible as the probable cause. If this inflammation did exist, it must have been dull and latent; there being no proof that in the ductus choledochus, it was consecutive to gastro-intestinal inflammation. If we wish to avoid mistakes, let us rigidly observe the distinction between that which is merely probable and that which is proved. We shall therefore merely point out certain other interesting circumstances in the present case; such as the different appearance presented by the bile in the small branches and in the great trunk of the hepatic duct; the isolated state of the two principal elements of that fluid (the green resinous and yellow matter); the particular state of the liver, often observed in ascitic cases; the sort of compensation that appeared between the small size of the liver and the enormous magnitude of the spleen; and, finally, the unexpected death of the patient. This sort of death, almost always sudden, without suffering, without previous derangement of the pulmonary or cerebral functions, is by no means rare in dropsical complaints, particularly where the dropsy is connected

with such a state of the liver as that now in question. In this case, as in many others, the cause of death is entirely unknown.

From the facts stated in this paper, we may draw the following conclusions:—

1st. Certain icteri, generally attributed to spasm of the biliary ducts,* are the result of inflammatory congestion of thes passages.

2d. This congestion is often consecutive to gastro-intestinal inflammation.

3d. The obliteration of the biliary canals may be momentary, as also the inflammation producing it. If this latter remain, the obliteration may become permanent, in consequence of thickening of the coats of the duct, and its final transformation to an impervious ligament.

4th. The obliteration may be either general or partial. In this respect we may anticipate a great number of varieties which farther investigation may ascertain. If the choledic alone is obliterated, the others, gorged with bile, may undergo a greater or less dilatation; and this may be such as to occasion a rupture. The gall-bladder, equally distended, protrudes under the ribs and occasions a tumour of variable dimensions. It may likewise burst, either by excessive distention or by inflammatory softening of its coats.—*Archives Générales, Oct.* 1824.

Hepatic Phthisis. The subject of the present paper was a married lady, about 35 years of age, who, for some years, had been afflicted with severe pains in the stomach, for which aromatic tinctures, æther, and even opium were had recourse to. She was of temperate habits, apparently scrofulous, and had borne children. At length a teazing cough came on, with dyspnœa and occasional hæmoptysis, followed by evening fever and night sweats. Previously to Sir T. Moriarty's attendance, she had headache and hemiplegia, but from these she was entirely recovered. She was considered as phthisical, and ordered milk diet and country air. This was in 1804, when Sir T. M. first saw her. On examination he was struck with the absence of any emaciation or acceleration of pulse. He found nearly the entire of the convex surface of the liver indurated and uneven to the touch. "Both lobes were evidently diseased." She complained of acute pain

* Cases 1 and 2.

in the right acromion and between the scapulæ—tongue furred —bowels slow—catamenia regular. For the present she was advised to remain in the country—to regulate the bowels with senna and tartarised soda, and to use chamomile tea acidulated with sulphuric acid. After some months she returned to town (Roscommon) much improved in appearance. Still she had recurrences of the hæmoptysis; but as this was considered as merely symptomatic, half a drachm of mercurial ointment was ordered to be rubbed in every night on the right side. When about an ounce of the ointment had been used a smart mercurial fever prevented its further exhibition, the gums being slightly affected She soon recovered from this; but a considerable period elapsed before the remedy could be resumed, (for what reason is unknown.) The interval had been spent in Dublin, under the care of Dr. Plunkett, who tried the nitric acid and saline bitters, without any advantage. After a period of seven months the headachs returned—the vessels of the eye became turgid—the pupils permanently contracted on the application of light—with sense of swimming and confusion in the head. These symptoms were soon followed by another attack of hemiplegia, which soon gave way to leeches, blisters, &c. At the solicitation of the patient, Sir T. M. was induced again to try mercury, after an interval of twelve months from its former exhibition. A recurrence of febrile irritation and sharp pain in the side again suspended the use of mercury. The side was relieved by leeching. During the two subsequent years the patient had frequent hemorrhages from the lungs. One night, at midnight, our author was called up to witness the following phenomena:— "The mouth gaped open, the lower jaw hung, as if dislocated, on the sternum, with such sudden agitations of it against the upper one, as imparted a tremulous motion to the whole body and bed. This gaping posture sometimes continued for minutes, and presented to the eye all the appearance of dislocation.

"Liniments with laudanum, æther, camphorated spirits of wine, and turpentine, were tried without any advantage. It at length occurred to me that pressure on that twig of the third branch of the fifth pair of nerves, which passes through the foramen at the chin, might be beneficial; the experiment succeeded, the oscitation having immediately ceased. On removal of pressure it again returned, but was stopped by permanent pressure; a silver coin was kept on by a bandage.

"This vibrating oscitation returned frequently at subsequent periods, but was always removed by the same means, which the patient herself was now in the habit of applying."

Our author now determined to adopt a merely palliative treatment. The side was generally relieved, for a time, by leeches, and the head by blisters. At length she was attacked with severe paroxysms resembling asthma, from which she was always relieved by assafœtida glysters and tincture of senna. These usually brought away much bilious and slimy fæces. The liver still continuing apparently to be diseased, mercury was a third time resorted to, and with the same effects as before. The physician now resolved to leave the complaint to nature, merely keeping the bowels soluble. "During the following year she had frequent shiverings; the induration of the side felt softer, and more elastic, and suppuration appeared evidently to have taken place. She was at length seized with symptoms of dysentery; the side became more flaccid and shrunk: the tormina and tenesmus were excruciating. Frequent enemas, and purgatives of calomel and cathartic extract, brought off incredible quantities of fetid, sanious, and purulent matter: quantities of pus were also suspended in the urine, which produced much irritation in its passage through the urethra. In some weeks the dysenteric symptoms abated in violence; but for a period of more than a year, evacuations of purulent matter, and with it quantities of a gritty substance, like coarse sand, continued to pass by stool; any delay of it in the rectum excited torture, and required constant enemas and brisk purgatives for its removal.

"The pulse, which hitherto showed little variation, now lost its intermission; the primary, as well as secondary symptoms of her disease, gradually disappeared; but extreme debility succeeded, which neither tonics, generous diet, or change of air, could prevent from increasing. The blood appeared deoxygenated, and the capillary vessels to have lost their tone. The surface of the body became covered with large purple ecchymoses; blood flowed from the uterus, the rectum, the lips, the nose and the skin, and the legs swelled; to these bandages were applied; the mineral acids were given abundantly in water, or infusion of roses or cinchona, as the state of the stomach admitted, and claret was given in a reasonable proportion. Under this plan she rallied surprisingly, and was enabled to take exercise in a

carriage; this was in 1813. After some months of gradual recovery, she persuaded her husband to reside in Dublin, where, after a short residence, she expired."—*Irish Transactions*, vol. iv.

On Anomalous Gout. By A. L. G. Bayle. Few diseases are involved in more obscurity than gout, whether we look to its nature, or its treatment. Few diseases veil themselves in more disguises than this Proteian malady. The multiplicity of its symptoms, the complexity of its forms, and the obstinacy of its course were such as to attract the attention of physicians in all ages, since the days of Hippocrates. But they have all failed in ascertaining its proximate cause—and what is of more consequence, its cure. M. Bayle, has, in the paper under consideration, brought forward some curious examples of the numerous metamorphoses which gout undergoes, and which show the necessity of being acquainted with the masks which it frequently assumes, as well to avoid errors of diagnosis, as to apply a rational method of treatment.

Case 1. Madame G——, 40 years of age, of a nervous temperament and delicate constitution, had enjoyed good health till the age of seventeen. Her grandmother had been a martyr to gout. In the course of her first pregnancy, and when only in her seventeenth year, she had an attack of strong convulsions in the muscles of her limbs and face, which lasted about half an hour. Ten years afterwards she had a similar attack in her second pregnancy, the day after being bled. During the last five or six years, domestic afflictions have rendered these paroxysms much more frequent. She became affected with deafness at the age of 24, which has continued ever since; and she is also subject to pains in her teeth. At the age of 30, she began to have dull pains in the joints of the feet, with hard indolent swellings resembling nodosities. The same, in some degree, in one of her hands. From 1818 till the beginning of 1823, Madame G—— had often felt darting pains in the hands and feet, which did not, however, prevent her from going about her usual occupations. In the month of May, 1823, she was seized, some days after suppression of the menses, with intense hemicrania, accompanied by heat of skin and fever, and for which leeches, aperients, antispasmodics and sinapisms were used. Next day there was

some mitigation of the hemicrania, while the feet swelled, became red, and painful. In a few days, both the hemicrania and the affection of the feet went off entirely. In August of the same year, she had a repetition of the hemicrania—and since that period two other accessions, all which were cured in four or five days by the means above mentioned. About 14 years ago, our patient, after some mental vexation, became affected with a dry cough, which was suddenly followed with complete extinction of voice, there being no pain, nor inflammation of the larynx. All sorts of remedies were tried in vain for the removal of this complaint. At length she remembered that her mother was cured of a similar affection by swallowing an ice. Madame G. had recourse to the same remedy, and with the same success as her mother. Since that period, she has usually lost her voice three or four times a year (generally after some chagrin) and always recovers it by swallowing ices. In the month of May, 1824, when the report closes, this lady was in the enjoyment of perfect health.

M. Bayle makes several reflections on the above case, which we need not introduce here. On a superficial view of the case, it will appear to many to present a succession of purely nervous affections unconnected with each other; but, on mature consideration, we are disposed to think, with our author, that they all, or most of them, had a connecting link, and that link was gout.

Case 2. J. B. A——, 33 years of age, of nervous temperament, had been ricketty in his infancy, but by the time he arrived at the age of puberty he enjoyed good health. He was even robust, and fresh coloured. A deformity in the chest, however, still continued, the right side being much more prominent than the left. His mother had been delicate and nervous—his father gouty—his sister has been deaf for many years, and subject to convulsions, whenever she experiences any mental agitation.

Mr. A. had scarcely attained puberty when he gave himself up to venereal excesses—and so early as the age of 20, he experienced dull and uncomfortable pains in the joints of his feet, accompanied by slight swellings of the same. These went off in about a fortnight, and now commenced a profuse discharge of perspiration from the feet, especially during the night. From this time till the age of 30, he rarely passed a year without a fit

of sickness of some kind. He had occasionally also pains and redness in the joints of the feet: and in the years that these occurred, he was in much better health than when he missed the visitations of gout. In the latter intervals, he was subject to numerous and strange affections—sometimes to the most alarming faintings—sometimes to apoplectiform seizures, during which he lost sense and motion, the pulse and respiration remaining free—at others, to such painful fits of cardialgia as caused him to cry out—ending in vomitings of porraceous matters which often lasted 24 hours without interruption, followed by a quick restoration to health. Finally, his illnesses sometimes assumed the form of copious and painless diarrhœa, lasting ten, fifteen, and even thirty days. During each and every of these attacks the urine and perspiration were very fetid.

In his 31st year, being the year 1821, Mr. A. enjoyed good health, with the exception of a sense of weight in his head, some dyspepsy, and a disposition to sleep after dinner. In May of the same year, he had demonstrations of gout in the feet for several days. On the 7th of the following month (June) he suddenly became senseless, his face being pale, pulse scarcely perceptible, extremities cold. He was bled, and sinapisms were applied to the knees. He soon recovered from this state, and for some days afterwards he had copious vomitings of many coloured liquids, with quick pulse, heat of skin, headach, and alarming attacks of syncope. In about two months he was restored to his usual state of health. In the autumn of the same year, he made a journey into the country, during cold weather, and was seized, some days afterwards, with acute pains in the epigastrium, and greenish vomitings, which lasted eight days. After this he was troubled with great noise in his ears, which augmented a deafness to which he had been for some time subject. In the spring of 1822, he had wandering and lancinating pains in his feet, followed by dry cough, and in a few days, hemorrhage from the lungs of about six ounces in quantity, with pyrexia. (*Blood-letting, leeches, sinapisms to the lower extremities.*) In eight days he recovered from this attack. Between this period and August 1823, he had two slight attacks of gout in the feet. In the beginning of September, during cold weather, he was seized with dry cough, which continued till the middle of October, when he one night brought up ten ounces of blood

which quickly coagulated in the basin. Immediately after this he felt himself quite well. Two days afterwards, a fresh attack of hæmoptysis, with dry cough and pyrexia. He was bled to eight ounces, which produced syncope of five minutes duration, and great alarm lest he should not revive. On recovering, he was better, but the cough continued throughout the month of November, in unconquerable paroxysms, and with acute pain in the region of the diaphragm. His breathing was now habitually tight—he had irregular accessions of fever, especially in the evenings—sometimes anorexia, sometimes appetite with painful digestion, nausea, and cardialgia when he indulged in food.—These symptoms continued, with exacerbations and remissions, till the end of the month. The remissions were accompanied or preceded by depositions in the urine, or fetid perspirations of the feet. Towards the end of November, he expectorated yellow and thick sputa tinged with blood—he was affected with dyspnœa—irregular diarrhœa, progressive emaciation, acute pain under the three false ribs of the *left side*, with swelling and redness of the skin in that quarter, the other symptoms before enumerated continuing the same. Towards the end of December, there occurred two or three accessions of most alarming syncope. Early in January, though reduced almost to a skeleton, he had an attack of gout in the feet, which were red, swelled, and extremely painful. During this accession the dyspnœa disappeared, but the other symptoms continued. On the 11th January, death put a period to his sufferings.

The same remark which was made on the first case, is applicable to this—namely, that, however various and apparently dissimilar this unhappy man's ailments, they were all referable to a gouty diathesis. Every man in practice, who keeps an attentive eye on the phenomena of diseases, will see examples more or less nearly approaching to those which we have stated. The elder Parry has related many cases bearing great analogy to these, in his admirable, but unfinished "Elements of Pathology."

Case 3. M. A. 46 years of age, a Comptroller of the Customs, of full habit and sanguine temperament, contracted debts during a protracted intermittent fever, which he was not afterwards able to discharge. Other misfortunes followed, which produced a melancholy state of mind. He was sober, active, and temperate in his food. In the month of January, he had an

attack of gout, which confined him a fortnight to the house. Greatly embarrassed with debts, and labouring under much anxiety of mind, he came to Paris, on the 29th December, 1820. His nights were now passed without sleep, and in a state of agitation, experiencing, at the same time, inexpressible pain in the head, and violent palpitation of the heart. Every thing presented itself to his imagination in the most gloomy colours. These symptoms increasing, he was, on the 2d Jan. in a state of actual derangement. Seized also with the desire of suicide, he distributed what little money he had to those who were nearest to him, and hastened out of Paris, without knowing whither he went, carrying with him a knife, with which he inflicted several wounds on himself, but none of them mortal, the knife being very blunt. He next resolved to drown himself; and arriving at the Pont de Neuilly, he was on the point of precipitating himself into the river, when he was prevented by a female, who, catching hold of him, exclaimed, "*what will become of your soul?*" He went into a tavern, where he passed the night. Next morning he attempted to hang himself, and nearly succeeded. On recovering from a state of insensibility into which he was thrown, he found himself quite bereft of sight; but this gradually returned, together with a glimmering of reason, which induced him to resist the desire of suicide. But this he could not long do. On returning to Charenton, he endeavoured to drown himself in the Marne, but was prevented by the thickness of the ice. Here he was secured and conducted to the Royal Asylum at Charenton, as a maniac. On examination, he was found in a high state of maniacal excitement, and was twice bled with benefit. Nevertheless, his face continued red, his pulse full and hard, his heart violently palpitating, and his mind in a state of profound melancholy. He remained at Charenton in a state of mental derangement, with much excitement, till the 7th January, when a fit of gout attacked both feet, and presently he was in a state of sound mind. He could *not*, however, perfectly recollect all that had passed during his phrenzied condition. —The gout ran a regular and pretty severe course, and the mental alienation returned no more.

The reader must here determine in his own mind whether the gout or the moral afflictions were the cause of the mental alienation. For our own parts, we think the melancholy moral emo-

tions prevented the regular course of the gout to the extremities, and threw it on the sensorium, with the consequent tendency to suicide and insanity. This idea is strengthened by the evident fact, that a regular attack of gout in the feet instantaneously dissipated the maniacal hallucination.

We shall introduce one more case, and then bring this paper to a conclusion.

Case 4. Madam Eliz. D——, 40 years of age, of nervous temperament, had at different times, several attacks of regular gout in the feet, and sometimes in the upper extremities. Occasionally, however, it took an anomalous form, and attacked the stomach with violent pains, vomitings, and severe colic, which did not cease till gout came to the extremities. Some pecuniary losses now occasioned a slight and temporary derangement of mind. Afterwards the assassination of her husband deprived her completely of reason for a time, which alienation has since returned often. In 1812, she threw herself into the water, and nearly drowned herself. She was then confined at Rouen, each time that the maniacal hallucination returned. She was set at liberty in the intervals. Two years ago, she became affected with violent cephalalgia, accompanied by frequent and painful vomitings, especially after taking any aliment. An accession of mania dissipated all these symptoms. Soon after the menses became suppressed, followed by menorrhagia and frequent syncopes. One year ago, an accession of mania was preceded by most severe gastric affections, faintness, and lypothymia.

On the 28th August, 1821, she entered the Asylum at Charenton, presenting the following symptoms: viz.—redness of the tongue, vomitings, somnolency, faintings, cephalalgia. These symptoms ceased, and an accession of mania came on, with constant agitation, running about, crying, singing, loquacity, and great inclination to mischief. The features were altered, the face pale, with the appearance of some abdominal affection. In two or three weeks these symptoms diminished, and she had frequent alternations of tranquillity and agitation. By the month of February, 1822, reason was completely restored. At this time, the tongue became red, with epigastralgia, vomitings, cephalalgia. The vomitings continued some time, but the pains in the head and stomach went off soon. Towards the end of April,

the gastric symptoms returned, with anorexia, pasty mouth, great tenderness at the pit of the stomach, with frequent bilious vomitings, provoked by the smallest quantity of aliment. It was only now that the physicians became acquainted with the patient's true history, and learnt that she had been subject to gout. Large sinapisms were therefore applied to the feet and the legs. Next day there was considerable amelioration of the symptoms, one of the feet being red and inflamed with gout. The day following, all the symptoms except those of gout had vanished. After this period, however, there were several alternations of gout and mania, the one never being present at the same time with the other.—*Rev. Med. Juin*, 1824.

AMERICAN INTELLIGENCE.

The American Medical Profession will learn with great satisfaction, that Dr. Samuel L. Jackson, of Philadelphia, is engaged in preparing for publication, a system of the Practice of Medicine. Such a work has long been a desideratum in this country, andwe anticipate its appearance with much pleasure, as we feel confident that a well written work by one who has had experience in the diseases of our climate, will speedily set aside many miserable European compilations, which have been foisted on our Medical public.

Dr. Jackson, is particularly well qualified for the important task he has undertaken. His opportunities for experience have been extensive, and he has studied our diseases with great devotion. It may be said of him with justice, that he is one of the best and most (anatomically) enlightened pathologists in the United States. We stated in our last number that no great time would elapse before American physicians would be guided in their practice, by the talents and skill of American authors, and thus far we have very little cause to fear being considered as too *enthusiastic*.

Dr. Dewees's new works on the *Diseases of Children* and on the *Diseases of Females* are rapidly advancing and may be expected during the present year. These with his recently published *System of Midwifery* are in a very great degree the

results of his own observation during a long continued and ample practice.

We are acquainted with the fact that several other origina medical works are now preparing for the press by our countrymen, and friends—though it would be premature to announce them at present. We are satisfied, however, that the spirit of emulation and the honourable ambition to excel is leading to the most desirable results in our native medical literature—and we can assure those who are labouring for the advancement of science and the honour of our profession, that they have our cordial wishes for their success, as well as that it is our fixed determination to give them every assistance in our power.

DANIEL DRAKE, M. D. has been unanimously elected Professor of the Theory and Practice of Medicine in the Transylvania University, at Lexington, Kentucky. The vacancy in the chair of Materia Medica caused by this appointment has not yet been filled. We may now hope that the learned Professor will speedily publish his work on the diseases of the *Western Country*, announced some time since, which his literary abilities and ample experience so well qualify him for making extensively interesting and useful.

A late number of a respected cotemporary journal, contains an annunciation of the reception of a set of CIVIALE's Lithontriptic instruments from Paris, by a distinguished surgeon of NEW YORK. From this we infer that the fact was not known that such instruments were brought to Philadelphia, fully six months ago, by Professor BROWN of Transylvania University, and that not only have they been extensively experimented with in this city, but the instrument has been several times improved by different instrument makers. Experiments were first made by Professors PHYSICK, GIBSON and HORNER, at the University of Pennsylvania, on the dead subject—and subsequently Drs. PHYSICK and J. R. BARTON have operated on the living patient. The last and most perfect lithontriptor has been produced in this city by that ingenious and scientific artist, Mr. ISAIAH LUKENS, and is allowed by all who have seen it to surpass any thing yet attempted in this way. Doubtless Mr. L. will meet with the most gratifying reception from Dr. CIVIALE, on his arrival in Paris, as he will place in his hands an instrument far better suited to the proposed operation, than could be readily conceived of by one who never has seen anything better than the original contrivance.

Medical Education.—With the single exception of *Paris*, we are not acquainted with a city where more favourable opportunities for gaining medical knowledge are offered than in Philadelphia. Not only have we the full course of the University, and a great number of subsidiary private lectures during the winter, but throughout the summer, the exertions of our public and private teachers are assiduously continued. The following sketch of the lectures regularly going on at this time will give a fairer view of the fact above stated than can be done in any other way: we are aware that this list is incomplete, as we have not at this moment the means of obtaining all the information to be desired. It will be quite sufficient however to show the zeal and spirit of our professional teachers.

Theory and Practice of Medicine, Dr. Chapman.
Midwifery, Dr. Dewees, Dr. Shoemaker, Dr. Bond.
Practice of Medicine, Dr. Parrish.
Surgery, Dr. Gibson, Dr. Hodge, Dr. Harris.
Anatomy, Dr. Horner, Dr. Godman.
Chemistry, Dr. Bache, Dr. Mitchell.
Physiology, Dr. Bell, Dr. Meigs, Dr. Coates.
Medical Jurisprudence, Dr. Griffith.
Pharmacy, Dr. Ellis.
Materia Medica and Pharmacy, Dr. Wood.

Clinical Lectures at the Almshouse Infirmary, by Dr. Chapman, Dr. Gibson, Dr. Mitchell, Dr. Jackson, Dr. Hodge, Dr. Harlan, Dr. Barton, Dr. Horner.

The libraries attached to the Almshouse and Hospital, contain the richest and most extensive collection of books on medicine and the collateral sciences in this country, and are easily accessible to students of medicine, who also enjoy the advantage of witnessing a great deal of practice. Among the other excellent opportunities afforded to resident students who wish to improve every moment of time, we may mention the facility of gaining access to the libraries, cabinets and lectures of numerous scientific and literary institutions. We may add that students of medicine engaged in experimental inquiries in Physiology, &c. are allowed the use of the *Philadelphia Anatomical Rooms*, during the recess, free of expense.

UNIVERSITY OF PENNSYLVANIA.

At a public commencement held April 5th, 1825, the degree of Doctor of Medicine was conferred upon the following gentlemen:

NEW YORK.

Andrew Comstock, on Dyspepsia.
James P. Boyd, on the Effects of Cold.
John Brinckerhoff, jr. on Hæmoptysis.
Ten Eyck Gansevoort, on Oleum Terebinthinæ.
Isaac N. Marselis, on Remittent Fever of Philadelphia County.
Isaac Brinckerhoff, on the Absorbent System.

NEW JERSEY.

John H. Burr, on Fistula in Ano.
Jacob T. Sharp, on Morbus Coxarius.

PENNSYLVANIA.

A. Carpenter Frazer, Epidemic of Lancaster.
Lothus Benson, on Scorbutus.
Andrew Wills, on Gonorrhœa.
Othniel H Taylor, on Gastritis.
James A. Hahn, on Cuticular Absorption.
John Wiltbank, on Action of the Heart.
William B. Fahnestock, on Circumscribed Aneurism.
William D. Gallaher, on Diseases of the Bones.
Henry A. Riley, on Modus Operandi of External Irritants.
Thomas H. Yardley, on Medicina Mentis.
Wilmer Worthington, on Intermittent Fevers.
William Plumstead, on Sequelæ of Intermittent of Chester County.
Thomas Tacey Smith, on Typhoid Fever of Almshouse.
William Wetherill, on Lead and its preparations.
Isaac W. Hughes, on Gonorrhœa.
George Augustus Hetich, on Epidemic of Chambersburg.
Charles C. Harding, on Fevers.
Robert M. Huston, on Hæmorrhoids.
William H. Harrington, on Pulvis Doveri.
Samuel M. Thomas, on Dysentery.
James Rankin, on Dysentery.
Henry Lorain, on Dysentery.
John Romig, on Diaphoretics.
Gilbert Heston, on Tetanus.

Jeremiah Kern, on Hydrothorax.
James Cox, on Ascites.
Philip M. Price, on Fasciæ of the Human Body.
Smith M. Price, on Bilious Colic.
Thomas W. Miner, on Ingesta.
Silas H. Beans, on Intermittent Fever.
Henry Abbett, jr. on Injuries of the Head.
Robert P. Simmons, on Injuries of the Head.
William H. Denny, on Bronchocele.
Charles Innes, on Sanguinaria Canadensis.

DELAWARE.

Andrews Murphey, on Puerperal Convulsions.
Justus Dunott, on Aneurism.

MARYLAND.

Robert C. J. Cary, on Nitro-Muriatic Acid.
John Sappington, on Hepatitis.
James P. Dickinson, on Hydrocepalus Acutus.

DISTRICT OF COLUMBIA.

Robert Ewing Kerr, on Mania a Potu.

VIRGINIA.

Alfred Leyburn, on Puerperal Convulsions.
Nicholas Marmion, on Fever.
Robert H. Mason, on Phlegmasia Dolens.
James W. Thompson, on Medical Topography.
Richard M. Hill, on Amenorrhœa.
William W. Wilkins, on Amenorrhœa.
James B. Claiborne, on Cholera Infantum.
William L. Wight, on Aneurism of the Heart.
Llewellyn Powell, on Ascites.
William C. Warren, on Dysmenorrhœa.
Thomas Dillard, on Erysipelas.
John A. Turner, on Pneumonia Vera.
John G. Parham, on Autumnal Fever of Greensville.
Alexander Bryant, on Hydrocephalus Acutus.
Thomas H. Clagett, on Effects of Mercury.
Benjamin F. Doswell, on Improvements in Surgery in the United States.
Richard Hill, on Hæmoptysis.
William W. Oliver, on Leucorrhœa.
Randolph S. Stubbs, on Tetanus.

Alfred Friend, Gastritis.
Thomas H. Watkins, on Bilious Remittent Fever.
Francis D. Jones, on Puerperal Fever.
John L. Cobbs, on Sympathy of the Brain and Stomach.
George Fleming, jr. Tetanus.
John E. Dennis, on Gillenia Trifoliata.
Charles Speece, on Gastro-cutaneous Sympathy.
William J. Ponsonby, Cynanche Trachealis.
Richard W. Fox, on Dysentery.
Robert Redd, on Arsenious Acid.
Dabney P. Philips, on Oleum Terebinthinæ
David O. Jones, on Hepatitis.
Orris A Brown, on Rubeola.
Lawrence A. W. Roane, on Acute Hepatitis.
Lewis Willis, jr. Cholera Infantum.
Thomas T. Slaughter, on Cynanche Trachealis.
John R. Wise, Rheumatismus Acutus.
Gustavus B. Campbell, on Acute Peritonitis.
William I. Scott, on Hæmoptysis.
James Hay, on Bilious Fever.
William T. Willis, on Hæmoptysis.

NORTH CAROLINA.

Rufus Haywood, on Cynanche Trachealis.
Samuel Kerr, on Urine in Disease.
William A. Shaw, on Modus Operandi of Medicines.
Silas Webb, on Miliary Fever.
John R. Hicks, on Anascara.
Willie Jones, on Acute Rheumatism.
John F. Ward, on Hydrocephalus Acutus.
Charles R. Yancey, Pneumonia Typhoidea.
Jacob L. Martin, on Local Origin of Fever.

SOUTH CAROLINA.

George Reynolds, on Puerperal Fever.
James O. Hagood, Gastritis.
Joseph H. Ramsay, on Yellow Fever of Charleston.
Francis M. James, on Bilious Remittent Fever.
John W. Smith, on Metastasis.
William Yates, on Jaundice.
Edward W. Hamilton, on Cataract.

GEORGIA.

James Holmes, on Physiognomy of Disease.
Paul H Wilkins, on Yellow Fever of Savannah.
John S. Law, on Pinckneya Rubescens.
Claiborne A. Watkins, on Rubeola Vulgaris.
Leonidas B. Mercer, on Intermittent Fever.
James E. Williamson, on Calomel.
Thomas P. G. Stephens, on Antim. Tartarisatum.

W. E. HORNER, M. D. *Dean*

The Medical Department of the Columbian College in the District of Columbia.—A Charter was granted by the Congress of the United States to the Columbian College in 1821. Soon after that period the Classical Department was instituted, and a course of instruction commenced.

The Trustees, in their first circular, expressed an intention of bringing into operation the Medical Department, as early as circumstances would admit. The present they consider the proper period for such organization. They have, accordingly, appointed Professors, and made arrangements for a course of Lectures on the various branches of Medicine, to be given the ensuing spring.

The first course will be commenced on the last Wednesday in March, and continued during three months. The Lectures will be delivered in the Medical Institution, situated in a central part of this city.

The Medical Faculty are:

THOMAS SEWALL, M. D. Professor of Anatomy and Physiology.

JAMES M. STAUGHTON, M. D. Professor of Surgery.

THOMAS HENDERSON, M. D. Professor of the Theory and Practice of Physic.

NICHOLAS W. WORTHINGTON, M. D. Professor of Materia Medica.

Full courses will also be given on Chemistry and Obstetrics.

An extensive Apparatus, recently imported from Europe, will afford the Lecturer on Chemistry ample opportunities for displaying the experimental parts of that science.

Arrangments will be made for exhibiting Clinical Practice and Operative Surgery to the Class.

The following extracts are from the Laws adopted by the Board of Trustees for the government of the Medical Department.

"Each Student, before he can receive the ticket of any Professor, shall pay five dollars to the Treasurer of the College, shall have his name enrolled on the College books, and receive a ticket of matriculation, as evidence that he has placed himself under the government of the Trustees and Medical Faculty.

"Each Student shall pay ten dollars to each Professor, making the sum of forty dollars for the present courses.

"All Students who may wish it, shall have the privilege of attending, gratuitously, the Lectures in the Classical Department of the College, on Natural Philosphy, Astronomy, Botany, Natural History, &c. by presenting a recommendation from the Medical Faculty to the President of the College.

"No Student shall be admitted to examination for a Medical degree, till—

"1st. He shall have attended each Professor during two full courses, or one full course in this College and one in some other respectable Medical Institution.

"2d. He shall have studied three years under the direction of some regular Physician.

"3d. He shall have satisfied the Medical Faculty of his classical attainments, if he be not a graduate in the Arts.

"4th. He shall have entered his name with the Dean of the Faculty as a candidate for graduation, and delivered to him an Inaugural Dissertation on some Medical subject, thirty days at least before the close of the course."

J. M. STAUGHTON, M. D. *Dean.*

Washington City, December, 1824.

TO SUBSCRIBERS.

The Publishers request that all Subscribers who have not yet transmitted the amount of their subscriptions for the current year, will do it with as little delay as possible. In every case in which it is not received within the year of publication, which ends in August, the Publishers must, without distinction, strike the name from their list.

CONTENTS.

I. An account of the Asylum for the Insane, established by the Society of Friends, near Frankford, in the vicinity of Philadelphia. By Robert Waln, Jr. - - - 225
II. Posthumous Papers of Jason V. O'B. Lawrance, M. D. Prepared for Publication from his Manuscript Notes, by John D. Godman, M. D. - - - - - - - 252
III. Note on the Actions of the Muscular System. By John D. Godman, M. D. - - - - - - - - - 270
IV. Observations on the Winds, and the Sickness amongst strangers in Havana, from August, 1821, to September, 1822. By Daniel Osgood, M. D. - - - - - 279
V. Remarks on the History of the Absorbent System. By C. D. Meigs, M. D. - - - - - - - - 286
VI. On the production of Animal Heat. Read before the Philadelphia Medical Society. By Henry Bond, M. D. 307
VII. On Periodicity in the Actions of the Animal Œconomy during Health and Disease. By John Bell, M. D. 328
VIII. On Digestion. By D. Francis Condie, M. D. - 348
IX. An Account of Mr. Isaiah Lukens's Lithokonion. By W. E. Horner, M. D. Adjunct Professor of Anatomy in the University of Pennsylvania - - - - - - 373
X. Case of a child with two Uvulæ. Communicated by Philip Tidyman, M. D. in a letter to Professor Chapman 380
XI. An extraordinary Case in which clots of Blood oozed from the face of a Girl. Communicated to Dr. Chapman 381
XII. Scirrhus Tumour of the Uterus. Communicated by Dr. Joseph C. Skinner, of Edenton, North Carolina, through Dr. Darrach - - - - - - - 383
XIII. A case of Labour with Carcinomatous Os Uteri. By John T. Sharpless, M. D. Philadelphia - - - 386
XIV. Case of Congenital Inguinal Hernia. By Caspar Morris, Resident Surgeon of the Pennsylvania Hospital 390
Foreign Intelligence - - - - - - - - 393
American Intelligence - - - - - - - - 410

THE

Philadelphia Journal

OF THE

MEDICAL AND PHYSICAL

SCIENCES.

ART. I. *An account of the Asylum for the Insane, established by the Society of Friends, near Frankford, in the vicinity of Philadelphia.* By ROBERT WALN, Jr.

MADNESS, in all its complicated forms, is one of the most afflicting dispensations that can befal human nature. To mitigate the miseries of so deplorable a malady, and co-operate in the restoration of those who were lost to civil and religious society, was impressed as a duty on the minds of many members of the Society of Friends, more particularly as it regarded those who professed the tenets of their church. It was believed, that a mild and appropriate system of treatment, in which, during lucid intervals, or a state of convalescence, the patient might enjoy the society of those who were of similar habits and opinions, would be productive of peculiar advantages. They justly thought, that the indiscriminate mixture of persons of opposite religious sentiments and practices; of the profligate and the virtuous; the profane and the serious; would very probably check the progress of returning reason.

THE

Philadelphia Journal

OF THE

MEDICAL AND PHYSICAL

SCIENCES.

ART. I. *An account of the Asylum for the Insane, established by the Society of Friends, near Frankford, in the vicinity of Philadelphia.* By ROBERT WALN, Jr.

MADNESS, in all its complicated forms, is one of the most afflicting dispensations that can befal human nature. To mitigate the miseries of so deplorable a malady, and co-operate in the restoration of those who were lost to civil and religious society, was impressed as a duty on the minds of many members of the Society of Friends, more particularly as it regarded those who professed the tenets of their church. It was believed, that a mild and appropriate system of treatment, in which, during lucid intervals, or a state of convalescence, the patient might enjoy the society of those who were of similar habits and opinions, would be productive of peculiar advantages. They justly thought, that the indiscriminate mixture of persons of opposite religious sentiments and practices; of the profligate and the virtuous; the profane and the serious; would very probably check the progress of returning reason.

In pursuance of this laudable object, proposals were, in the year 1811, made to the Yearly Meeting of Philadelphia, from two of the Quarterly Meetings, to make provision for such of their members as were deprived of their reason. The consideration of the subject was referred to a committee, who submitted their report in the following year, which was adopted by the meeting; and, in consequence of this conclusion, a plan and proposals for an asylum were circulated among Friends. This plan was not restricted to the admission of members only, but included all those who professed the principles of the society, under whose care and notice it was to be wholly conducted.

On the 14th of April, 1813, the first meeting of the contributors was held in Philadelphia; and at the succeeding meeting, in June, a Constitution was adopted. The association was designated by the name and title of "The Contributors to the Asylum for the Relief of persons deprived of the use of their Reason." This institution was intended, not only to provide for the suitable accommodation of that afflicted portion of the society who were insane, but to furnish, besides the requisite medical aid, such tender sympathetic attention, and religious oversight, as might soothe their agitated minds, and facilitate their restoration to sanity.

It was a paramount object to establish the site of the proposed institution in a retired situation, which, with the intervention of prohibitory rules, might protect the patients from the gaze of idle curiosity, and the conversation of unfeeling inquirers; and afford a privacy calculated to inspire their troubled minds, on every dawn of intellect, and in every moment of calmness, with consoling evidence, that they were indeed regarded *as men and brethren.* A tract of land, containing fifty-two acres, of good quality, in a high and healthy situation, with a large proportion of wood, and well supplied with water, was accordingly purchased: it is situate about five miles from Philadelphia, and one mile westward of Frankford.

At length, under the superintendence of a committee, appointed for that purpose, a large and beautiful stone building

was erected, fronting, and at some distance from, the public road. The centre building is sixty feet square, and three stories high, having two wings, each one hundred feet long, and twenty-four wide; the whole being roofed with slate. The wings are two stories in height, each containing twenty chambers for patients, about ten feet square, with a gallery or passage ten feet wide. In the basement of the centre building, are the refectory, kitchen, ironing-room, store-room, and pantry, with rooms adjoining, under the wings, for cooking, washing, &c. The remainder of the basement of the wings is divided by arches, serving as repositories for fuel, store-rooms, smoke-house, &c. The first story of the centre building has four large rooms, two of which are appropriated as day-rooms for the patients, and the others for the accommodation of the superintendent and his family. The second story consists of two large rooms, also employed as day-rooms, for the least noisy and convalescent patients, and of four smaller ones, used for the accommodation of the superintendent's family. There are four large and three small rooms in the third story, for the reception of patients; and four comfortable lodging rooms, with two windows to each, in the garret, besides five large and convenient closets.

In the arrangements of the building, economy and convenience have been studied with equal success. The great extension of the front to the length of two hundred and sixty feet, arose from the desire of affording every comfort to the patients, derivable from that important auxiliary in convalescence, the free admission of light and air. Their influence on organic and inorganic bodies, requires no elucidation. The free circulation of air, the great supporter of life, is of primary importance;—without proper ventilation, the resources of medicine may be developed in vain; the miserable sufferers are suffocated in the effluvia of their own bodies, and a long train of physical evils are added to their mental miseries. In the construction of receptacles for lunatics, rooms are, in general, placed on both sides of the galleries, into which a gloomy light, and a small supply of air, are admitted by doors and windows at their extremities. The

plan adopted at the Friends' Asylum, in this respect, is worthy of imitation. On one side of the long galleries are situated the chambers; on the other a corresponding number of windows: over each door, there is a stationary cast-iron sash, fixed in an oblong ventilator, thirty-two by twenty inches, over which is a corresponding moveable sash of wood, containing ten panes of glass. Small doors, about seven inches square, are fixed in the pannel of every door, secured, as well as the latter, by mortise locks, so constructed, that they cannot be opened from within: these serve for the purpose of conveying food, &c. to violent patients, and of frequently examining their situation, without the trouble and disturbance of entering their chambers. The same contrivance exists in the third story of the centre building. The windows of the galleries, as well as of the seven rooms in the third story, are also provided with stationary cast-iron frames. The lower sashes have panes of glass in them, six by eight inches in size; the upper are without glass, outside of which are wooden frames corresponding in size, which are glazed, and hung so as to be raised or lowered at pleasure: this admirable plan unites the advantages of security, neatness, and durability, and removes the aspect of a place of confinement, which iron bars would necessarily occasion. There is a similar window in each chamber, fifty-four by thirty-four inches in dimension, communicating directly with the external air. Thus a free current of air may not only be made to circulate in the very recesses of the Asylum, but, when necessary, its admission may be regulated by circumstances.

The same may be said with regard to the admission of light, the impressions of which it is necessary to modify according to the excitability and health of the patient. By means of outside shutters, the restless, sleepless, and unmanageable individual, may be placed in salutary darkness; while the fearful patient, with irritable senses, all whose symptoms are aggravated by it, may enjoy the full light, while he breathes the fresh air, of heaven. Experience has proved, had not the scale of the building comprised, in its extensive wings, single ranges of chambers for patients, with

the accommodation of ample and airy galleries, together with the advantages derived from the commodious day-rooms of the centre building, that adequate comfort could not have been afforded to the afflicted inhabitants, and that the progress of recovery would have been considerably retarded, if not arrested;—more particularly during those seasons of the year when the patients are necessarily confined to the house.

There is an indescribable horror attached to the idea of a conflagration in a Lunatic Asylum, which causes the most insensible to shudder. The criminal within the walls of his prison, when he hears the appalling cry of fire, and the grating of the door which releases him from its fury, is alive to his danger, and rushes forth to life and liberty. The unhappy mariner, in the midst of the ocean, when he sees the flames twining around his bark, retires conscious of his peril, to his frail and feeble boat, and clinging to life with all the pertinacity inspired by nature and reason, watches the approach of some heaven-directed sail, to rescue him from destruction. Not so the miserable maniac: insensible to his danger, and obstinately refusing to quit his apartment, even when time is allowed to afford him free egress, he can only be rescued from an awful death by force, which the progress of the flames often renders it difficult, and sometimes impossible, to employ.*—Hence, in the Friends' Asylum, the utmost care is taken to guard against so dreadful a calamity. The bottoms of the floors, and the sides of the joists, from the first story to the garret inclusive, are plastered with two coats of mortar, and then ceiled in the usual way: this renders the building more wholesome and comfortable than if it were arched with brick or stone, and almost, if not altogether, as secure from fire. The whole of the basements of the wings, in which are situated the stoves for warming the chambers, is paved with brick: of the same material are the floors of the wash-house, scullery, and about one-third of the kitchen adjoining the fire-

* When a detached wing of the York Lunatic Asylum was consumed by fire on the 28th December, 1813, *four of the patients*, (from these causes,) *perished in the flames.*

place and oven. A close stove in the dining-room, is heated during the time of meals, and after the early hour of supper, is suffered to expire, and becomes extinguished before the family retires for the night. The stoves in the day-rooms are guarded with preventives, which render it impossible for the patients to have access to the fire they contain; transverse pieces of iron secure the apertures intended for the admission of air, and the larger doors can only be opened by instruments in the possession of the keepers. To all these precautions is added the careful inspection of the superintendent, after the other members of the family have retired to rest.

A majority of the insane require warmth, although there are many who can bear cold with great impunity, and others are insensible to, although they suffer by, it. Hence a safe, certain, and effectual mode of warming the interior of the wings, has been adopted, by means of large stoves, or ovens, fixed in the arches of the basement of each wing, the heated air from which is conducted by flues into the galleries, and issues at two separate apertures in each, well secured with marble. Separate from this general plan, there is also a warming apparatus, on the same principle, under several of the rooms in each wing, which conducts the warm air directly into the chambers.

At the north-western extremity of the passage in the basement, is an ice-house, for preserving provisions during the summer season, filled from without, but having a communication with the interior. A full supply of water from a never-failing spring, is obtained by means of a forcing pump, placed in a stone building, two stories in height, and situated at a short distance from the main house: in this building are the seed-room, and a work-shop for the patients, provided with all the necessary tools. The water is introduced through leaden pipes, into a large reservoir in the garret of the south-east wing, whence it is conveyed to the kitchen and scullery, and to the warm, cold, and shower baths, fitted up, for the benefit of the patients, in the second story of the same wing. At each extremity of the wings are enclosed passages and stairs, eight feet broad, leading to the yards. The front of

the centre building is ornamented with a lofty portico, having pillars of wood, and abutments of marble. A neat vestibule, in the rear, surrounded with seats, and sixteen feet in length, hangs over the area, and leads to the flower garden. It is completely enclosed with Venetian shutters, and affords a cool and delightful retreat, where the summer's sun cannot penetrate, and a constant current of air flows refreshingly through the spacious hall which leads into the interior of the building. In the rear, or south-west side, of the centre building, there is an area, fifteen feet wide, connected with one of ten feet in width along the north-western wing, and paved with brick. These areas are surrounded with a luxuriant grass bank, rising regularly to a level with the vestibule, and surmounted with a beautiful range of low junipers. In the rear of the wings are situated the yards or airing grounds, for the use of the male and female patients, separated by the space in the rear of the centre building, and each containing about five-ninths of an acre of ground, in grass, surrounded by walks. These are enclosed by board fences, ten feet in height, on the top of which is a simple, but effectual, apparatus for preventing the escape of the patients. Boards about eight feet long and eight inches broad, and apparently forming part of the stationary fence, but detached from it, are placed around the whole circuit of the enclosure: these are connected to the fence beneath by hinges. Blocks of wood, about two feet long, are attached to these boards on the outside, at the lower part of which, are rings though which a strong wire is conducted: at the extremities of these wires alarum bells are attached. When the patient, in attempting to escape, seizes one of these moveable boards, it turns inwards on its hinges, the adventurer falls back into the yard, and the appendant blocks of wood, protruding, stretch the wire, and sound the alarm, which is distinctly heard through the building. Sheds, paved with brick, and surrounded with seats, are about to be erected in each yard, for the accommodation of the patients.

The flower garden, extending from the vestibule to a dark green hedge of cedar, which separates it from the kitchen garden, offers a rich repast to the eye, while it almost be-

wilders the steps of the visiter by its complex winding walks. Thickly blooming double-blossomed almonds—splendid groupes of variegated tulips—rich blue flags—dark sweet-scented shrub—violets—bowers of honey-suckle—clustering roses—pure white lilies—and a great variety of beautiful shrubs and flowers, mingle their rich and various tints, and shed around a delicious fragrance in this miniature conservatory of the beauties of nature.

The kitchen garden comprises about one and an half acres of ground, and, under the care of a skilful horticulturist, affords abundance of vegetables for the use of the patients. From this source alone, they are plentifully supplied, at the proper seasons, with a great variety of wholesome vegetables. Cauliflowers, and early vegetables of various kinds, are successfully reared in hot-beds; and a sufficient quantity of tobacco for the restricted consumption of the convalescent patients, is also grown on the premises. Salutary herbs, and medicinal plants, so essential to the invalid, are cultivated in large quantities. The nursery contains peaches, apricots, and a number of thriving young trees and shrubs. The garden affords besides, a sufficient supply of raspberries and currants for the whole family; a few peaches, goose-berries, strawberries, and musk-melons. Plums, cherries, apples, and pears, are to be found throughout the grounds.

About twenty acres of the farm are in a state of cultivation; the rest is woodland. It is separated from the road which passes in front of it, by a flourishing thorn-hedge. Crops of grass are principally grown, with a sufficient quantity of corn and potatoes for the consumption of the family, and some wheat. Six milch cows supply the table with a large quantity of milk and butter, although not equal to the consumption throughout the year. The barn is spacious and built of stone, and a substantial wall of the same material, encloses the barn-yard.

A shaded, serpentine walk, now skirting the edge of the wood, now plunging into its dark and dependent foliage, and embracing, in its windings, more than a mile, leads over a neat and lightly constructed bridge, to a pleasure-house, which

might justly be termed the Temple of Solitude. It is securely founded on a rock, which juts abruptly forth from the declivity of a steep hill, three sides of which are almost perpendicular, and of considerable height. A chasm, formed by nature, in the rock, to the left of the entrance, affords, with the assistance of stones transversely arranged, a descent to the small valley beneath. The straight and towering tulip-tree, the sturdy oak, the chesnut, and the beech, cast their cool shadows around this wood-embosomed abode of contemplation. A rapid stream ripples over the rocks, at a few yards distance, producing the melancholy, but pleasing, sounds of a distant waterfall. On the left, in the distance, the eye encounters a rude and magnificent wilderness, where the cedar mingles its deep evergreen with the rocks, piled in huge masses, one upon another: on the right appears a dark and almost impenetrable thicket, skirting and overshadowing the rivulet. The light and airy fabric, perched on the brow of the rock, could alone betray to the enchanted visiter, that this sweet, lonely, and romantic retreat, had ever before been explored by man. Bacon remarks, that whosoever is delighted with solitude, is either a wild beast, or a god; and Cicero says, that nature abhors it: but

> "Are not these woods
> "More free from peril than the envious court?"

And cannot the rational man

> "Exempt from public haunt,
> "Find tongues in trees, books in the running brooks,
> "Sermons in stones, and good in every thing?"

The treatment of insanity may be divided into two kinds; moral and medical; at the present day, the great majority of medical men expect happier effects from the former than the latter.* With the exception of pharmaceutic preparations and medicines, every thing belongs to the moral treatment;—for example, the habitation, classification, cleanliness, diet, coercion, punishment, treatment of the feelings, treat-

* Spurzheim.

ment of the intellectual faculties, and occupation of the patients. Of these, as connected with the Friends' Asylum, it is necessary to speak. It is neither our province, nor have we the capacity, to offer any remarks, except in general terms, on the medical treatment which is adopted. Insanity and its symptoms present as much variety with regard to causes and circumstances, as any other disease. There is not, and there never can be, a specific remedy against it. Many think with PINEL, that medical treatment is of no use in that disease; "but it is only," says Dr. RUSH, "because the diseases of the moral faculty have not been traced to a connexion with physical causes, that medical writers have neglected to give them a place in their systems of nosology, and that so few attempts have been hitherto made to lessen or remove them by physical, as well as rational and moral, remedies." It is true, that when insanity is treated as a corporeal disease with too little discrimination—when all the treatment appears, as if there were a remedy against every symptom—when every thing is one unvaried routine of hospital practice—many ill effects will ensue, because the varieties of insanity cannot, or ought not to, be treated by any general rule. There is no doubt that nature often cures insanity, but she, at least, as often causes the patient to become fatuous. As the patient in other diseases, is often relieved by art, and would die without it, so is it with insanity. Nevertheless, that physician acts well, who, with proper discrimination, "Gives melancholy up to nature's care, and sends the patient into purer air."

We agree with SPURZHEIM, that the medical treatment of insanity ought to be governed by the general principles of pathology;—that the brain, being an organic structure, requires, as to anatomy, physiology, and pathology, every consideration yielded to any other organ;—that it is generated and nourished, increases and decreases, falls sick and is cured, like the rest of the body;—that the material changes of the instruments alone, are the cause that the manifestations of the mind are deranged;—that, in the cure of insanity, the instruments alone are restored to their natural state;—and, that the mind, as immaterial, cannot undergo any physical change.

Upon the general principle that the proximate cause of insanity is corporeal, and resides in the brain, the practice in the Asylum appears to be rationally founded. An experienced physician, residing within a mile, visits the institution daily, and performs the functions of his office with care, discrimination, ability, and humanity;—qualities, eminently essential in a professional man, and which have not a little contributed, in the present case, to the happy results which have attended the general efforts to "unknit the sorrow-wreathen knots" on the brow of the maniac, and restore him to the dignity of his nature. The establishment, moreover, enjoys the advantage of possessing, in the person of the superintendent, a resident physician of long experience, and ready to administer the proper remedies in cases which require immediate relief. What a source of self-gratulation and honest pride must it be to all those whose benevolent exertions are more immediately directed to meliorating the conditions of the unhappy patients, to contemplate them as

> "The charm dissolves apace,
> "And as the morning steals upon the night,
> "Melting the darkness, so their rising senses
> "Begin to chase the ignorant fumes that mantle
> "Their clearer reason."

But although the use of drugs and medicaments is allowed, in almost every case, to be indispensable, less weight is attached to it in the Friends' Asylum, than to moral treatment. A full conviction of the propriety of mild, but regular treatment, of attention to the dispositions and wants of the patients, of providing suitable employment and recreations, and, above all, of cherishing every ray of returning reason, is the settled principle of action at the Asylum. The great variety of character necessarily embraced in the cases introduced to the care of the institution, frequently renders it extremely troublesome and difficult to "fetter strong madness with a silken thread." To demonstrate the great labour required to effect this all-important object, and the different means it is necessary judiciously to apply, we need only designate a few of the prominent and manifold symptoms which attend

this frightful disorder. A leading feature is a rapid, raving, delirium, in which the conceptions of thought appear too rapid and changeable for a distinct utterance of the corresponding words, which have little or no connexion with each other: sometimes, half sentences are given, time not being afforded for perfect ones, before the thought is changed. Patients of this description will often laugh, and cry, and pray, and swear, almost at the same moment; while others will rave for days and weeks together upon one subject. Another feature is a total perversion of the affections, and of all common opinions; the nearest relations and best friends, are become with them their worst enemies; their food is poisoned, and the world is ruined; and their very senses bring them wrong information: they are tormented with the most gloomy and groundless suspicions, and labour under the most abject fears and terrific apprehensions. Others fancy themselves afflicted with tormenting and incurable diseases: others contend that they have committed the most unpardonable sins. Some fancy themselves transformed into the prince of darkness, or into obnoxious animals, which it would be proper to destroy: some seem constantly bent on self-destruction; while others fancy that they are to suffer under the most unjust sentences, and constantly plead their innocence. Others mourn over their afflictions, and ask every one that approaches them, whether it is possible for them ever to recover from their horrid state. Some vociferate from morning till night, and make all the noise possible; others laugh, and dance, and sing continually. Some fancy themselves kings, queens, generals, or other great characters; and many usurp the dignity of heavenly beings, and utter that which, in others, would be blasphemy. Some have an unconquerable propensity to steal; others play with or conceal old rusty nails, remnants of cloth, or ends of thread or tape, as treasures of great value, with which they decorate their persons. Some seize every opportunity in their power, to tear to small pieces, their clothes and bed covering, to break the windows and furniture, and abuse all around them; others will make use of improper language or conduct —yet at the same time, will talk rationally, and if asked their

reason for so doing, will say that they were compelled to do it, by something impressed upon their thoughts. Some are vindictively furious; some insist upon it that they are bewitched; and some that they are haunted by demons or wild beasts: and the most troublesome symptom of all is, where the hallucinations approach so near to rationality, as to be with difficulty distinguished from it; their friends have used them ill, and they are worse treated than others of the family. Some discover an irresistible propensity to drunkenness, or to making the most foolish bargains, and have a total disregard of necessary economy; while others suffer under the most deplorable mental depression, and will sit for hours, and days, and weeks, and months, nay years, under the influence of settled melancholy. Some fear poverty in the midst of plenty; others complain of, and continue in, the most obstinate apathy. Some are afflicted with nervous or mental stupour, (following over-excitement, and arising from collapse of the vessels of the brain,) in which both the animal and mental functions seem locked up, the eyes appear fixed, the tongue bound, and the senses, as well as the limbs, refuse to perform their respective offices.* In fine, "one sees more devils than vast hell can hold;"—another is "a merry, mad-cap-lord;"—and a third is as "mad as the sea and wind, when both contend which is the mightier:" one is possessed of visions which "make him gasp, and stare, and catch the air;" while another, in that pitiable state which ought to command all our commisseration, is ready to exclaim, "I am not mad;—I would to heaven I were, for then it's like I should forget myself."—All these varied species may, at this moment, be found within the walls of the Asylum; and hence the difficulty of adapting to each the proper mode of treatment. Towards every description of cases, however, whether the disease be of long, or more recent duration, or whether the symptoms are mild or severe, the most soothing and gentle treatment is uniformly extended. The superintendent and matron, with the visiting physician and assistants, are thus

* Bakewell.

ment of the intellectual faculties, and occupation of the patients. Of these, as connected with the Friends' Asylum, it is necessary to speak. It is neither our province, nor have we the capacity, to offer any remarks, except in general terms, on the medical treatment which is adopted. Insanity and its symptoms present as much variety with regard to causes and circumstances, as any other disease. There is not, and there never can be, a specific remedy against it. Many think with PINEL, that medical treatment is of no use in that disease; "but it is only," says Dr. RUSH, "because the diseases of the moral faculty have not been traced to a connexion with physical causes, that medical writers have neglected to give them a place in their systems of nosology, and that so few attempts have been hitherto made to lessen or remove them by physical, as well as rational and moral, remedies." It is true, that when insanity is treated as a corporeal disease with too little discrimination—when all the treatment appears, as if there were a remedy against every symptom—when every thing is one unvaried routine of hospital practice—many ill effects will ensue, because the varieties of insanity cannot, or ought not to, be treated by any general rule. There is no doubt that nature often cures insanity, but she, at least, as often causes the patient to become fatuous. As the patient in other diseases, is often relieved by art, and would die without it, so is it with insanity. Nevertheless, that physician acts well, who, with proper discrimination, "Gives melancholy up to nature's care, and sends the patient into purer air."

We agree with SPURZHEIM, that the medical treatment of insanity ought to be governed by the general principles of pathology;—that the brain, being an organic structure, requires, as to anatomy, physiology, and pathology, every consideration yielded to any other organ;—that it is generated and nourished, increases and decreases, falls sick and is cured, like the rest of the body;—that the material changes of the instruments alone, are the cause that the manifestations of the mind are deranged;—that, in the cure of insanity, the instruments alone are restored to their natural state;—and, that the mind, as immaterial, cannot undergo any physical change.

Upon the general principle that the proximate cause of insanity is corporeal, and resides in the brain, the practice in the Asylum appears to be rationally founded. An experienced physician, residing within a mile, visits the institution daily, and performs the functions of his office with care, discrimination, ability, and humanity;—qualities, eminently essential in a professional man, and which have not a little contributed, in the present case, to the happy results which have attended the general efforts to "unknit the sorrow-wreathen knots" on the brow of the maniac, and restore him to the dignity of his nature. The establishment, moreover, enjoys the advantage of possessing, in the person of the superintendent, a resident physician of long experience, and ready to administer the proper remedies in cases which require immediate relief. What a source of self-gratulation and honest pride must it be to all those whose benevolent exertions are more immediately directed to meliorating the conditions of the unhappy patients, to contemplate them as

> "The charm dissolves apace,
> "And as the morning steals upon the night,
> "Melting the darkness, so their rising senses
> "Begin to chase the ignorant fumes that mantle
> "Their clearer reason."

But although the use of drugs and medicaments is allowed, in almost every case, to be indispensable, less weight is attached to it in the Friends' Asylum, than to moral treatment. A full conviction of the propriety of mild, but regular treatment, of attention to the dispositions and wants of the patients, of providing suitable employment and recreations, and, above all, of cherishing every ray of returning reason, is the settled principle of action at the Asylum. The great variety of character necessarily embraced in the cases introduced to the care of the institution, frequently renders it extremely troublesome and difficult to "fetter strong madness with a silken thread." To demonstrate the great labour required to effect this all-important object, and the different means it is necessary judiciously to apply, we need only designate a few of the prominent and manifold symptoms which attend

this frightful disorder. A leading feature is a rapid, raving, delirium, in which the conceptions of thought appear too rapid and changeable for a distinct utterance of the corresponding words, which have little or no connexion with each other: sometimes, half sentences are given, time not being afforded for perfect ones, before the thought is changed. Patients of this description will often laugh, and cry, and pray, and swear, almost at the same moment; while others will rave for days and weeks together upon one subject. Another feature is a total perversion of the affections, and of all common opinions; the nearest relations and best friends, are become with them their worst enemies; their food is poisoned, and the world is ruined; and their very senses bring them wrong information: they are tormented with the most gloomy and groundless suspicions, and labour under the most abject fears and terrific apprehensions. Others fancy themselves afflicted with tormenting and incurable diseases: others contend that they have committed the most unpardonable sins. Some fancy themselves transformed into the prince of darkness, or into obnoxious animals, which it would be proper to destroy: some seem constantly bent on self-destruction; while others fancy that they are to suffer under the most unjust sentences, and constantly plead their innocence. Others mourn over their afflictions, and ask every one that approaches them, whether it is possible for them ever to recover from their horrid state. Some vociferate from morning till night, and make all the noise possible; others laugh, and dance, and sing continually. Some fancy themselves kings, queens, generals, or other great characters; and many usurp the dignity of heavenly beings, and utter that which, in others, would be blasphemy. Some have an unconquerable propensity to steal; others play with or conceal old rusty nails, remnants of cloth, or ends of thread or tape, as treasures of great value, with which they decorate their persons. Some seize every opportunity in their power, to tear to small pieces, their clothes and bed covering, to break the windows and furniture, and abuse all around them; others will make use of improper language or conduct —yet at the same time, will talk rationally, and if asked their

reason for so doing, will say that they were compelled to do it, by something impressed upon their thoughts. Some are vindictively furious; some insist upon it that they are bewitched; and some that they are haunted by demons or wild beasts: and the most troublesome symptom of all is, where the hallucinations approach so near to rationality, as to be with difficulty distinguished from it; their friends have used them ill, and they are worse treated than others of the family. Some discover an irresistible propensity to drunkenness, or to making the most foolish bargains, and have a total disregard of necessary economy; while others suffer under the most deplorable mental depression, and will sit for hours, and days, and weeks, and months, nay years, under the influence of settled melancholy. Some fear poverty in the midst of plenty; others complain of, and continue in, the most obstinate apathy. Some are afflicted with nervous or mental stupour, (following over-excitement, and arising from collapse of the vessels of the brain,) in which both the animal and mental functions seem locked up, the eyes appear fixed, the tongue bound, and the senses, as well as the limbs, refuse to perform their respective offices.* In fine, "one sees more devils than vast hell can hold;"—another is "a merry, mad-cap-lord;"—and a third is as "mad as the sea and wind, when both contend which is the mightier:" one is possessed of visions which "make him gasp, and stare, and catch the air;" while another, in that pitiable state which ought to command all our commisseration, is ready to exclaim, "I am not mad;—I would to heaven I were, for then it's like I should forget myself."—All these varied species may, at this moment, be found within the walls of the Asylum; and hence the difficulty of adapting to each the proper mode of treatment. Towards every description of cases, however, whether the disease be of long, or more recent duration, or whether the symptoms are mild or severe, the most soothing and gentle treatment is uniformly extended. The superintendent and matron, with the visiting physician and assistants, are thus

* Bakewell.

enabled, in general, to obtain the confidence, and to produce a degree of discipline amongst the subjects of their care, the accomplishment of which, by such means, is considered an object of primary importance. Having acquired this desirable control, an opportunity is afforded for minute investigation of the peculiar character of each case, showing the medical remedies necessary to be employed, as well as pointing out those essential moral auxiliaries, which sympathetic feeling and an attentive observation of mental disorders, are calculated to suggest. Steadily pursuing these modes of management, those concerned in the application, are, in general, not long without satisfactory evidence of their efficacy; and their benefits cannot be better substantiated than in the cure of a great number, and the melioration of ALL, of the patients, who have been admitted into the Asylum.

With regard to the *Habitation* of the patients, in the present case, we have already shown it to be possessed of every comfort which a high and healthy situation, free ventilation, and ample space, can afford. Here the spacious windows open upon green fields and agreeable scenery, not upon gloomy walls and melancholy objects. Here we see no patients fastened by chains, and sitting at the grating of their doors or windows like savage animals in cages; or grovelling in dark, cold, and filthy cells. We see here no miserable beings, lying upon straw and dirt, exposed to all vicissitudes of season and weather, reduced to the mercy of a turnkey, and less attended to than a horse or a wild beast. In fine, the Friends' Asylum is not suited to produce insanity, or to prevent, rather than promote, restoration to health: it is not intended as a place of imprisonment, but a place of cure. We find there, no beautiful architecture, no fine columns, superb stair cases, lofty domes, and external decorations, but what appear much more essential, neatness, comfort and convenience.

A most important part of the moral treatment of patients, is the proper *Classification* of them. It is obviously disadvantageous to mingle the furious and the melancholy, the imperious and the fearful, the vociferous and the peaceful, the vil-

hinous and religious, the clean and unclean, the curable, convalescent, and incurable, together. These divisions ought properly, and according to Spurzheim's plan, to be three in number;—the curable, the incurable, and the convalescent. But the form of the building at the Asylum, will not admit of this; nor, taking into consideration the number of patients, is it now a matter of particular importance. That a building erected at some distance from the present fabric, for the purpose of separating the violent and noisy patients, from those who, in a convalescent or more quiet state, are annoyed and injured by the sound, would be of great advantage, is indisputable: but according to the existing arrangement, this evil is avoided as much as it can be, until the funds of the institution will admit of further improvement, by providing a separate receptacle for the violent and incurable. The patients are divided into two classes: the upper stories of the wings are appropriated to the harmless, the quiet, and the convalescent; the lower stories, to the violent, the noisy, and incurable. Each class, both in the male and female department, has a distinct day-room, twenty-two by twenty feet in dimension. When a patient, which seldom happens, is incessantly vociferous, he is removed to an apartment in the fourth story of the centre building, where his cries are less distinctly heard.

The personal comforts of the patients, in a curative point of view, are of great importance; among these *cleanliness* holds a conspicuous rank, because it is absolutely necessary to health. In the Friends' Asylum, there is no suffocating effluvium, to excite nausea and vomiting. The frequent, and in some cases daily use of baths, a strict attention to the apparel and persons of the patients, and the care which is taken to cleanse and purify the beds, chambers, and galleries, give to the sufferers every advantage, both as to health and bodily comfort, that cleanliness can impart.

The *diet* of the patients is of course regulated by their peculiar symptoms. Those who can be entrusted with the management of their own appetite, being about two-thirds of the whole number, assemble at meal-time in the refectory,

and eat together. It is then only that the male and female patients meet, and are seated on different sides of the tables. Their food is of the most wholesome and substantial kind, and such as may be found on the tables of the middle class of society, and of respectable boarding-houses. The board of the farmer, though wealthy, does not equal it. There are no meagre-days,—no days set apart for meat; nor is there fixed food on fixed days of the week. Breakfast is served in summer about six, in winter between seven and eight, o'clock; it consists of coffee, superfine wheat bread and butter, fish or meat, and potatoes; or, for those who prefer them, boiled milk and bread. The dinner bell sounds throughout the year at meridian. Fresh beef, veal, mutton, or pork, with a great variety of vegetables, according to the season, and occasionally salt meat, followed daily by pies or puddings, constitute this repast. It is seldom, as it is the case in the Friends' Asylum, that we see on the tables of similar institutions, the most choice pieces of meat, and such vegetables as asparagus, cauliflowers, green-peas, tomatoes, egg-plants, &c.: yet even these are as common here as on the tables of the rich. Supper takes place in summer at seven, in winter at five o'clock; and consists of tea, bread and milk, sometimes chocolate, wheat bread, and pickles, varied occasionally with mush, and cakes of different kinds. No spirituous, or fermented liquors are allowed. Soon after dark all the patients are secured in their respective chambers, excepting those convalescents who enjoy the liberty of the grounds, and who remain with the family until their usual hour of retiring to rest, which is nine o'clock. The superintendent and his family, and during a part of the year, the managers who weekly inspect the institution, eat at the same table. There is no distinct table for any part of the family whatever. This course is highly gratifying to the feelings of the patients: they find themselves, in a degree, placed upon an equality, with those who are labouring for their restoration, and who, if rarely seen, and then only in the character of superiors, they would fear, but not love. Their almost uniform exemplary and quiet conduct during meals, is the best pledge of the respect and affection,

which violent means can never impress on the maniac, and which kindness, sympathy, and benevolence, only can excite.

Those who eat in their respective day-rooms, are prevented from attending the common table from different causes. Some are too voracious; while it is necessary to compel others to take nourishment. As the diet is made conformable to the particular curative plan adopted towards each individual, it is of course necessary to give him his appointed food, according to the prescription of the visiting physician, and remove from him the power of acting in opposition to it. This class, with two exceptions only, eat together in their day-rooms.

Coercion forms a material part of the moral treatment of insanity, and no other point has been subject to more disgusting and enormous abuses. Reason and experience show the necessity of confining those who are deprived of the use of their reason, in such a manner as to prevent them from injuring themselves or others; but to chain, and to beat them, is both cruel and absurd. That coercion is only to be considered as "a protecting and salutary restraint," is the principle adopted at the Asylum. It would, indeed, be a very convenient mode for the keeper to iron every one who is a little troublesome; to indulge the vindictive feelings which the inconsistent, but often half-rational, conduct of the patient frequently excites in his mind, by indiscriminate punishment;—and to lessen his labour with "all the apparatus of chains, darkness, and anodynes." In the Friends' Asylum this would be impossible. The selection of attendants is so judiciously made, that none would have the will, did they possess the power, to pursue such a course. They are not allowed to apply any extraordinary coercion, by way of punishment, nor to change, in any degree, the usual mode of treatment, without the permission of the superintendent. Some patients are perfectly unmanageable without bodily restraint; and the most material point is to discover the different means of coercion which different patients require. As

the most tender method generally produces the best effect, the mildest possible means are adopted; all experience having shown the greater efficacy of mildness. Hence no stripes and blows, no resentment, no return of injury, are permitted. A keeper who, under any circumstances, might return a blow from, or strike a patient, would be instantly dismissed. Here are no iron bands or collars—no handcuffs—no manacles—no fetters—nothing to convert the poor patients into felons, and their abode into what Pinel calls a "medical prison." The eye of the patient is not offended by the constant view of iron grates or bars, nor his ear burdened with the rattling and clanking of chains: the construction of the window frames prevents the former, and the substitution of leather for iron, the latter.

Confinement in a solitary chamber, is found, in most instances, to prove effectual. In certain violent cases, however, it is necessary to adopt more powerful means. The patient is then secluded in a gloomy, rather than a dark room, and when the extremity of coercion is found to be absolutely necessary, a case which seldom occurs, he is confined in a strait waistcoast, and in a recumbent posture, by means of broad leathern belts crossing his breast and legs, with straps affixed, which encircle his wrists and ankles. During the last year, only a single patient was confined in this manner: this was a recent case, (May, 1825,) and perhaps the most violent one that has fallen under the care of the institution. It is a fixed rule to employ coercion no more, and no longer, than personal safety requires; for nothing is more certain than that the cure is retarded by unnecessary confinement. If an individual is furious for a few days, or at particular intervals, he is not, on that account, fettered for years; and the cases are rare indeed, where constant personal confinement is indispensable. At the present time, two patients only are secluded; one an incurable, the other a recent case; and before the admission of the latter, the former was, for more than eighteen months, the only instance of permanent confinement in a chamber. Of those who are permitted the range

of the yards, the galleries, and the day-rooms, one only is confined to a chair, and another, her sister, so secured with foot-straps of leather, as not to impede her walking, while she is prevented from passing over the fence, a feat, which she would otherwise accomplish with facility. Thus among thirty-seven patients, one only is permanently secluded, but without other bodily restraint—one only, labouring under the first paroxysms of mania, is temporarily confined with unavoidable strictness—one only, is bound, in the common sitting-room, with a leathern belt which admits of almost every change of position—and only one is prevented from escaping, by means of long and easy straps around the ankles.

Punishments, properly adapted and judiciously applied, are indispensable; but corporeal punishment by blows is not tolerated, on any pretext whatever. When persuasion and mild means fail, resort must be had to that principle of fear, which has a salutary effect upon all society, when moderately and prudently excited by the operation of just and equal laws. Without a temperate, but firm, administration of power, the necessary discipline could not be preserved, and all would become chaos and confusion. But, governed by the irrefragable truth, that

> ——————————— "All constraint,
> "Except what wisdom lays on evil man,
> "Is evil,"———————————
> ——————————— "And begets,
> "In those that suffer it, a sordid mind,
> "Bestial, a meagre intellect, unfit
> "To be the tenant of man's noble form,"

it is the constant endeavour of the superintendent and matron, and of the attendants, to excite as much as possible the operation of superior motives, and to induce fear, by means of austerity or punishment, only when a necessary object cannot otherwise be obtained. In such cases, recourse is had to the shower-bath, immersion in water, solitary confinement, and, very rarely, to the strait waistcoat, or leathern straps.

No other modes of punishment are known in the Asylum,

and it has been experimentally proved, that the power of judicious kindness is much more effectual in preventing misconduct, than personal punishment. Some may maintain that, as an influence must be obtained over the patient through the medium of fear, blows and stripes are the best means of producing a permanent impression, and that corporeal punishment may sometimes render people rational by the impression of terror; others, with great simplicity, abhor the idea of inflicting any punishment, however mild, on the insane, who are incapable of discriminating right from wrong, and therefore "know not what they do." The former opinion is cruel, absurd, anti-christian, and brutal. All experience has proved that austerity and rigour, assumed consequence, and airs of self-importance, are the least effectual means of obtaining an influence over them. As to the latter opinion, punishment is never inflicted on those who have no self-control over their actions. But the great majority of insane persons possess a degree of command over their wayward propensities, and have the power to distinguish good from evil. In such cases, few will deny, not only the propriety, but necessity, of salutary coercion.

The proper mode of treating the feelings and intellectual faculties of the variously disordered patients, is one among the most difficult duties performed in the institution. The good and ill-tempered; the bashful and indecent; the morose and the gay; the quarrelsome and friendly; the mischievous and peaceable; the rebellious and obedient; the obstinate and tractable; the cunning and ingenuous; the proud and modest; the open, candid, and mild; the distrustful, jealous, envious, vindictive, irascible, or forbearing;—and, in short, every variety of character, requires different treatment, for which it is impossible to lay down general rules.* One must be soothed, and another threatened. Gentle manners, kindness, and the greatest mildness, form the ground-work of the system, by which the feelings of the patients in the Asylum are generally control-

* Spurzheim.

led and interested. Kind, but firm, authority, is used to keep others in subjection. Derison, and deception, as extremely hurtful, are never employed. Ridicule, acting on the self-esteem of the individual, more firmly fixes the erroneous notions which it is intended to eradicate, and the detection of deception, however praise-worthy the object, is naturally followed by the loss of that confidence and respect which the patients ought to entertain for the persons who treat and govern them. As to the intellectual faculties, no advantage, except in extremely rare cases, has been found to arise from reasoning with them on their peculiar hallucinations; because, one of the distinguishing marks of insanity, is a fixed false conception, which occasions an almost total incapacity of conviction. In fact, the exhibition of logic as a remedy, is attended with little or no success. "An endeavour," says Mr. HASLAM, "to convince madmen of their errors by reasoning, is folly in those who attempt it, since there is always, in madness, the firmest conviction of the truth of what is false, and which the clearest and most circumstantial evidence cannot remove." Instead, therefore, of endeavouring to prove, according to logical rules, to a patient, who even when in health, may have been incapable of, or unaccustomed to, close reasoning, that his ideas are false and his sensations deranged, the superintendent treats him as a rational being, and introduces in conversation such topics as he knows will most interest him, and on which he is best qualified to converse. It has been found, that the less notice that is taken of the fancies of the patients, the less disposed will they be to retain them. In the intercourse which the greater part enjoy with the family of the superintendent—in the constant and general inspection of the superintendent and matron—and in the management of the attendants—no practicable means are neglected, which may tend to change the train of thoughts, interest the affections, and remove or diminish the painful sensations of the sufferer. In a word, the Friends' Asylum presents rather the pleasing picture of a large family, united in the bonds of love, than of a receptacle for lunatics.

Nothing can more strongly establish the usefulness of

Occupation than the fact, that in those asylums for insane, where labour makes a part of the regimen, a greater number of patients recover:* and, in the present instance it is fully corroborated, for of one hundred and forty-one patients, admitted into the Friends' Asylum, from the time it was opened in May, 1815, up to the month of March, 1824, *only eighteen remained in the house without much sensible improvement.* In many cases the disease is nourished from want of suitable occupation and recreation, and the health of the patients is injured by want of bodily exercise. Much attention, therefore, is given, to devise means for employing their time, according to their several capacities. The whole business of the farm, under the regulation and with the aid of the farmer, is performed by such patients as from habit and health, are equal to the task. The gardener derives his sole aid in digging, planting, weeding, wheeling, and watering, from them. All the wood, (for which economy urges the substitution of coal,) consumed in the establishment, is sawed, split, wheeled, and piled by the patients. All the water used in the house, is thrown into the reservoir by their labour at the forcing pump. A part of the male patients work at the washing-machines; of the female, at the washing-tubs. Tools are provided in the work shops for those who can be entrusted with them. The walks, grass-plots, and grounds immediately around the house, are kept in order by them; and the male patients assist in the house-work, necessary in their wing. The female patients are from necessity more steadily employed than the male, but with less bodily exercise. During the winter, their occupations are not impeded, while husbandry and horticulture, which, at other seasons, employ the other sex, are stationary. The greater number of the women are regularly engaged, according to circumstances, in washing, ironing, house-work, chamber-work, kitchen-work, needle-work, knitting, spinning, &c. The important results arising from this system of occupation, are daily apparent. Spurzheim remarks "that, in *all* institutions for insane, the

* Spurzheim.

male patients who assist in cutting wood, making fire, and digging in the garden, and the females who are employed in washing, ironing, and scrubbing floors, often recover; while persons, whose rank exempts them from performing such services, languish away their life within the walls." These remarks do not apply to the Friends' Asylum. It is unjustifiable, and even criminal, to permit any considerations of rank to interfere with the curative process. A monarch, afflicted with insanity, had he the power of choice, would willingly barter his crown, and descend to menial employments, to obtain restoration to reason. Hence, little or no stress is put upon the previous situation of the patient, except as it relates to a due regard to his feelings, and a proper adaptation of labour; and, we are taught by experience, that the greater part, when thus employed, never fail to enjoy a more happy state. At this moment, the institution affords the example of a physician, strongly interested in horticulture, and continually employed in different vocations within the gardens; a silversmith and a taylor, of course accustomed to sedentary occupations, are particularly industrious in cutting wood: a merchant may be seen at the washing-machine, and a thrifty farmer scrubbing the floors of the galleries. Females, delicately reared, accustomed at home to little manual labour, may be found, willingly and cheerfully, assisting in the kitchen, or in the chambers. In fine, the idea ought to be universally eradicated, that strong and vigorous patients, on whom moderate manual labour would produce the happiest results, ought to be suffered to loiter away their time in idleness and apathy, brooding over and increasing their delusive conceptions, merely because they chanced to have been born and educated in a particular rank of society.

Recreation, as well as occupation, is afforded to the patients; and various means are taken to withdraw their minds from injurious and melancholy musings: among these may be enumerated, long walks around the grounds, riding through the country, reading, writing, &c. One-fourth of the patients, five of whom are considered incurable, are, during the day, under no personal restraint; and have full liberty to employ

and amuse themselves within the precincts of the farm; some of these associate altogether with, and are almost considered a part of, the superintendent's family. Others are daily invited into the parlour or office, where they enter into conversation, or peruse the newspapers. Many of the patients attend Friends' meeting at Frankford, twice in each week. But, speaking in a general point of view, much remains to be effected in this branch of the moral treatment of the insane; and it has been well remarked, that if the same ingenuity were exerted to increase their recreations, as are frequently employed to amuse the vain, the frivolous, and the idle, many more gleams of comfort would be shed over the unhappy existence of lunatics. Many modes of amusement might be beneficially introduced into the present establishment. The courts of the Retreat, near York, are supplied with rabbits, sea-gulls, hawks, and poultry, which are generally very familiar with the patients; and it is believed that they are not only the means of innocent pleasure, but that the intercourse with them, sometimes tends to awaken the social and benevolent feelings. Music regulated according to the feelings of the patient, but never analogous to the deranged manifestations of the mind, might be advantageously employed. Various games of ball would accelerate the recovery of the convalescent: the erection of a ball-alley, which might be so readily accomplished by increasing the height of a small part of the fence, and levelling a corner of the men's yard, would yield both exercise and amusement in the game of hand-ball. And a more invigorating and suitable sport could not well be imagined, than bowls, or nine-pins.

The immediate superintendence of the Asylum is conducted on principles which cannot fail of bringing forth good fruit, where the parent stalk is not irretrievably blighted. It is not guided merely by a sense of duty, as the agents of the contributors, but by the conscientious and religious feelings which ought to bind all the children of men together, in bonds of brotherly love. Authority and order is maintained rather by kindness, condescension, and indulgent attention, than by severity; the afflicted are treated as rational beings,

not as brutes. The superintendent and matron never sit at table without being surrounded by lunatics;—one or more are constantly in the family parlour;—not an hour in the day are they separated from some among them;—and in return for the kindness shown towards them, and the feeling manner in which they are treated, the patients almost uniformly behave with propriety, and many of them cherish towards their benefactors, the warmest gratitude, affection, and respect. A striking proof of the power obtained over the patients, almost exclusively by mild treatment, occurs on every Sabbath evening, when they are all, both male and female, with the exception of the one or two permanently secluded, collected together in their respective day-rooms, where a portion of the scriptures is read to them. It is seldom that any interruptions take place; on the contrary, the silence and quiet that reigns around are really astonishing. The exemplary order and harmony which prevail among the different members of the family, and the economy and neatness manifested in its domestic regulation, are worthy of peculiar notice; and a great share of the present prosperity of the institution must be attributed to the conscientious and judicious discharge of their duties, by the friends who reside at, and have the immediate superintendence of, the asylum.

The officers of the institution consist of twenty managers, a treasurer, and clerk, who are annually elected by the contributors. The managers appoint the superintendent and matron, the visiting and consulting physicians, and the officers and assistants employed in the service of the establishment: they are so classed that three of their number inspect the Asylum weekly, on Saturday, each visiting manager serving two months. Any monthly meeting belonging to the yearly meeting of Friends held in Philadelphia, contributing two hundred dollars, and every individual subscribing six dollars per annum, or twenty-five dollars at one time, and being and continuing members of the Society of Friends, become members of the association.

No patients are admitted excepting those who are members of the Society of Friends, or professors of their doc-

trines. Many believe that it requires the actual right of membership to procure the privilege of admission; and others are so narrow-minded as, if not to denounce, to withhold well-merited praise from, an institution, which, according to them, grew out of and is guided by sectional spirit. To the first, we answer, that fifteen of the thirty-seven patients now in the house, do not belong to the society; and the latter would do well to remember, that, while Friends support their own poor, and prevent them from becoming a burden upon society, they contribute their full share to the maintenance of the poor of all other denominations. Not an individual, we believe, was found so bigoted as to attack the sectional spirit of Friends, when they relieved their fellow citizens from a portion of the poor-rates by establishing the Friends' Alms House in Walnut street. Why then should they not be permitted, undisturbed, to watch over and nurse the insane, as well as the poor, of their society? With equal propriety, might they be required to receive at their almshouse, the paupers of other denominations, as grant the admission of lunatics at their asylum, not attached to the society, nor comprehended in the plan of the institution. It might, indeed prove serviceable to it, so long as there is vacant room, to admit patients of other sects, under the stipulation that they should be removed to make room, at any time, for members of the society: but it should be done as a matter of favour, not of right. The lowest rate of board is two, the highest five, dollars per week; the patients to make compensation for all damages done by them to the glass, bedding, or furniture,* or to pay, in lieu thereof, a small addition to their board. At the present time, the patients amount to thirty-seven, which is a greater number than at any former period; with four keepers, or about one to every nine. Every patient has a distinct bed and apartment;—neither double beds, nor the placing of more than one patient in a room, being

* It is a remarkable fact that, from the opening of the institution until the year 1824, a period of seven years, the whole amount of charges of this nature against all the patients, was only $30 19 on account of glass broken, and $27 17, for damages done to furniture.

allowed. More than fifty patients could be thus comfortably accommodated.

The near relations or particular friends of patients are permitted to see their connexions when circumstances will admit; but, in most cases, they are productive of more evil than good. Patients are frequently more unsettled and ungovernable for some time afterwards. The general admission of visiters would be improper and injurious: patients never ought to be exhibited to gratify the curiosity of strangers. No persons, therefore, are admitted to the apartments occupied by patients, unless accompanied by a manager; but, on application to the superintendent, they may obtain permission to view the other parts of the building and the adjacent grounds.

The original cost of the building was about $43,000, and of the farm $6760; since when $3000 have been expended in improvements and repairs on the former, and $850 on the latter. During the last five years, from 1820 to 1825, inclusive, the expenses of the institution, including general supplies, salaries, wages, furniture, medicines, books, and incidental expenses, (as taxes, printing, stationary, &c.) averaged $3762 per annum. In the same period, the average annual amount received for board of patients, including clothing and damages committed, was $4292. The amount of payment for board, clothing, articles destroyed, and other expenses of patients, for the year ending in March, 1824, were $4375 01; and for the next year, $4265 01: the family expenses, including supplies, salaries and wages, were in those years respectively, $3366 29, and $3111 53. The aggregate amount of legacies left to the institution, including that of James Wills, of $5000, is $10,826. The whole debt of the contributors, which, in 1818, amounted to $14,933, has been annually and gradually reduced, and amounted, in March, 1825, to $7733. The library, founded by a donation of 200 volumes, valued at $500, is small, but well-selected, and consists principally of medical and religious works.

From the opening of the Asylum, in May, 1817, to the month of March, 1825, the number of patients admitted, was - - - - - - - - -		158
Of these have been discharged—Recovered -	53	
Ditto ditto much improved	23	
Ditto ditto improved -	17	
Ditto ditto without apparent change - - - - - - - -	9	
Died - - - - - - - - -	21	
Remained in the house - - - - -	35	
		158
Average annual number of patients during 8 years		19¾
Average ditto during the last five years - -		31½
Average ditto during the year ending in March, 1825		33
Number of patients in the Asylum, May 20, 1825. Females, 18—Males, 19 - - - - -		37

Frankford, May 20, 1825.

ART. II. *Posthumous Papers of* JASON V. O'B. LAWRANCE, M. D. *Prepared for Publication from his Manuscript Notes, by* JOHN D. GODMAN, M. D.

[Continued from page 13.]

Dissections of Subjects dead of Yellow Fever, at New Orleans, during the Years 1817, 1818, *and* 1819.

OBSERVATION IX.

J. H. a native of Massachusetts, aged twenty-four, remarkably large, and of a full habit. He walked to the hospital to place himself under treatment, and could scarcely have been sick for more than two days previous to his admission, on the 17th of November. He did not complain much at this or

at any time, but his back pained him, and he could not sleep at night; yet, his pains and restlessness were not great. He never complained of pain over the stomach or abdomen, nor of pain in the head. During the two last nights of his life he was somewhat delirious, and did not sleep well. Sometimes he vomited, though he generally could retain bark, &c. when administered.

His pulse was never frequent nor strong except on the first day he was in the hospital. The same night he was bled, and took vj grains of calomel; this, with the exception of a dose of calomel and jalap, given a short time before his death, was the only medicine he took. His skin was not unnaturally warm, but it was always dry. After the first evening, his pulse was so moderate, low and weak, that I gave him bark, wine, and chicken broth. A raw soreness soon attacked the back part and bottom of his scrotum, and degenerated into a fetid and darkish ulceration, which gave much pain when touched. He discharged a bloody kind of matter from the mouth whilst sick, and the attendant informed me that black matter had also been thrown up by him. Death occurred, about the seventh day of his disease, on the 22d Nov. 1817.

Dissection, six hours after death.—There was much fat over the throat and abdomen. The skin was generally yellowish, and the face stained with the bloody matter vomited.

For want of time, the *head* was not internally examined. When the scalp was cut through much blood flowed, of a dark venous appearance.

The *right lung* was generally adherent to the surrounding parts; the left was also adherent, but not to so great a degree; no doubt these adhesions were of long standing. *Liquor pericardii* was more than an ounce in quantity, and yellowish: the *heart* looked well.

The lower part of the *œsophagus* was most highly inflamed on the inside, in some places appearing denuded as if by ulceration, or the solution of its lining membrane. The inside of the *stomach* was most highly inflamed, of a dark red, the larger end of the stomach being all over of a dark red colour. The lower end was much less coloured, and this

tinge becoming fainter as it approached the *pylorus*. The stomach contained a dark red evidently bloody fluid, and seemed unlike the villous coat of the cardiac part of the organ.

The upper part of the *small intestines* was much inflamed; being very much hurried, I could not examine the other bowels.

The *liver* was pale, ash-coloured, and apparently parboiled, larger and much firmer than natural. The *gall bladder* was neither yellowish nor greenish on the outside, but of the colour of the healthy intestines, containing a moderate quantity of thin yellowish bile, of an unhealthy aspect. A little muddy yellowish bile was given out when the liver around it was pressed. The *spleen* was large and tender. The *pancreas* was large and rather hard. *Kidneys* natural: the urinary bladder very thick in its coats, containing some yellowish water.

OBSERVATION X.

L. G. who came into the hospital the 9th of July: had been previously sick for several weeks. Apparently strong and well made.

Symptoms.—Tongue furred at its edges, quite smooth and somewhat shining—rather dry along its middle, but not dark—pulse febrile and weak—skin dry and slightly warmer than natural. His brain somewhat oppressed, (as he laboured under mild derangement)—was thirsty—spake low—was smeared with bilious fæces—made no water on the day of his admission: his body was unpleasantly fetid, independent of the odour from his discharges.

Died three days after coming to the hospital.

Dissection, eight hours after death.—Under the scalp some yellowish serum was effused into the cellular substance at the back of the head. The whole cortical substance of the *brain* was of a dirty darkish colour, as if it had been inflamed; yet the large vessels of the brain altogether, were not peculiarly distended. The medullary or fibrous matter was not as white as common. A considerable quantity of water in the lateral,

third and fourth ventricles. The whole brain rather softer than natural. The *cerebellum* not so peculiarly altered in its cortical substance as the cerebrum.*

The *lungs* were sound and contained much air. The *heart* was flabby, tearing easily after being cut into.

The *stomach* was darkish in many places on its villous coat, and in some dark reddish, as if it had been inflamed. The *liver* was large and rather soft—remarkably round and blunt at its edges. An appearance like an old scar fully two inches long, was on the convex side of the large lobe not far from the attachment of the fundus of the gall bladder. The *gall bladder* adhered singularly to the cellular substance of the mesocolon, and contained a quantity of dark grumous bile, some of which in the centre was nearly hardened into a lump, but crumbled to pieces on pressure. The bile in the gall bladder, was about of the consistence of soft mush that has not been cooled. The *hepatic duct* contained some yellowish bile. The *pancreas* felt hard.

OBSERVATION XI.

A man who seemed to be a Swede or Norwegian, came into the hospital in the last stage of fever, as he died a few hours after his admission, with the black or coffee-ground vomit. I could not learn any thing of the history of the case, though it was very probable he had not been properly evacuated.

Dissection. The head, back of the neck, &c. were black and blue with extravasated blood. The black vomit matter ran out of the mouth when the head was allowed to depend. The skin was very slightly yellowish; the cellular substance contained a considerable quantity of fat. The *brain* was much engorged with blood.

* It often happens that much blood is discharged in examining the brain, especially if there has been any lesion of this organ. This patient had been ill for some time; I know not positively whether to attribute the colour of the cortical substance in this case to previous inflammation, as it looked peculiarly darkish; but what other cause is there that would have produced that colour, except disorder of its blood vessels? L.

The *lungs* contained much blood. The *stomach* was inflamed in many parts, especially towards the superior portion. The œsophagus and cardiac orifice were inflamed internally. Some patches of extravasated blood were evident between the coats of the stomach.

The fluid found in the stomach was considerable in quantity, of a dirty mucous appearance, not like the matter of black vomit. From this I should infer that the whole of the black, (or dark brown,) vomit matter must have been nearly all ejected before death.

The *small intestines* were very high coloured about their middle and upper portions. The middle portion appeared most so, internally and externally, in some places of a darker hue on the inside: the distended minute vessels ramifying on the internal surface looked dark, having apparently been the seat of high inflammatory action. Pale fæces were found in some parts of the small and large intestines. Throughout the whole digestive tube there was no trace of the dark coloured fluid that is usually found in yellow fever patients, yet the matter ejected before death, and found staining the lips and face subsequently, was true black vomit.

The *liver* was remarkably sound and firm in substance, and of a natural colour; the *pori biliarii* contained some bile. All the ducts were pervious, and contained good-looking bile. The gall bladder was of moderate size, and it contained a small quantity of rather thin but naturally coloured bile.

The *omentum* was very vascular. The *spleen* was natural. The *pancreas* smaller than usual. Both *kidneys* were highly red and inflamed. The *urinary bladder* contained no water, and was contracted to a very small size.

OBSERVATION XII.

A young Frenchman, aged 19, a native of Paris, came into the hospital on the third day, and died on the sixth day of his disease.

Dissection, twelve hours after death.—Skin more of a lead colour than yellowish. Fat over the breast and abdomen in moderate quantity, showing that he was of a full habit. The

flesh generally of rather a paler colour than I have usually seen in yellow fever subjects.

The *scalp* was very slightly vascular; the temporal muscles pale and not discharging blood when cut through. External vessels of the cerebrum and cerebellum highly distended with venous looking blood. The dura mater of a natural colour.

The substance of the *corpus callosum* was of a bluish colour, as if putrefaction were beginning in it; indeed, the brain generally smelled somewhat putrid, having none of the ordinary odour of brain, which is peculiar and easily recognised. This putrid scent of the brain was, moreover, different from the ordinary smell of putridity. A considerable quantity of bloody fluid was found in both cavities of the chest. The *lungs* appeared sound.

There was no effusion into the cavity of the abdomen. The stomach was *not* inflamed as most frequently happens in this disease, but was of a dirty dark colour in some parts of its internal surface. The œsophagus at the lower part was of a darkish cloudy red colour. The *small intestines* were much inflamed, the large intestines less so; all the intestines felt doughy.*

The villous coat of the stomach peeled off readily; this coat at the upper part of the duodenum had many pits in it, as if the substance had been removed where these depressions were. The stomach contained a dark brown fluid, which gave on a sheet the coffee ground stain; there was some of this fluid in the duodenum.

The *liver* was of good size; but rather flabby in consistence.

OBSERVATION XIII.

A native of New York aged thirty-six, came into the hospital with symptoms of intermittent fever. He took much

* I was much struck with the appearance of the intestines, which seemed much more inflamed when viewed from the outside, than when internally inspected. L.

bark and wine with some good effect, but always seemed remarkably weak and listless. The tongue was rather clean and moist, and pulse not denoting fever after a few days. I then thought him to be convalescing, but pains of the upper part of the abdomen, vomiting, slightly yellowish skin, tongue moist but of a deep red colour, all showed that the malignant remittent was present. In a short time after these symptoms, he died with black vomit, on the thirteenth day from entering the hospital.

Dissection.—Body much emaciated; the skin universally yellow.

Lungs natural, except somewhat gorged with blood.

The *omentum* was destitute of fat; much extravasated bloody fluid in the cavity of the abdomen, with which the peritoneal surface was generally moistened. The *mesentery* generally coloured, with extravasated bloody looking fluid in some parts of its cellular substance. The mesentery was most highly coloured nearest to the intestines, and the omentum was also highly coloured where attached to the greater arch of the stomach.

The *stomach* was internally high coloured or inflamed towards its upper part; this high colour lessened gradually towards its pyloric orifice. Much of the black vomit matter was in the cavity of the stomach, especially at the larger part.

The *duodenum* contained some good looking bile. There was some of the black vomit matter in the rest of the small intestines. Near the cœcum the contents appeared like very dark, thick, jelly-like bile. The large intestines contained some black vomit or dark coagulated portions of matter.

The *liver* was brownish, neither so pale nor so high coloured as I have witnessed this season in pure bilious fevers. It looked as if it contained bile in its substance. The ductus communis, cystic and hepatic ducts, all contained greenish, good-looking bile. The gall bladder was of a smaller size than usual, and full of a darkish bile.

Pancreas much engorged with blood, and had some extravasated fluid, blood and water, in its cellular substance; the

same appearance extended to the adjacent parts of the stomach and spleen, as if some violent injury had been done. A similar collection of extravasated blood existed around the right kidney, which was large and high coloured.

OBSERVATION XIV.

A young man, aged twenty, native of Massachusetts, had been seven or eight days sick, on his way from fort Plaquemine. He had not passed urine nor evacuated his bowels for eight or ten days. He did not complain of pain, except from the irritation of the bladder; he was rational, remarkably easy, and slept much of the time. He would turn and move a little in bed after calmly dozing—complain slightly, ask for drink, throw it up shortly after, wish for something, mention that he would get better, ask to be well covered, and fall asleep again. He had occasional convulsions; I saw him at the termination of one: he was senseless; his pulse was much reduced. He fell asleep, and after dozing awhile awoke in his senses.

On the evening preceding his death, he discharged bloody water, or almost clear blood, by the urethra. He died on the third day after his admission with black vomit.

Dissection.—Stomach highly inflamed on its villous coat, which had remarkably large rugæ on its internal surface.

The *liver* was sound; the gall bladder very small and almost empty; ducts all patulous. The *kidneys* contained coagulated blood, and some blood was extravasated in different parts of them as if they had been bruised; their pelves contained a small quantity of blood. The urinary bladder was full of a high coloured fluid, resembling blood mixed with urine or serum.

CASES OF TETANUS.

OBSERVATION XV.

Tetanus from the bite of a Spider.—Dennis, a black, aged sixty, had complained about three weeks previous to his illness of a bite inflicted by a spider. The arm had swelled

to a great extent, and was very painful; the swelling subsided. Complained of stiffness in his jaws, and during a night in the third week from the injury, he was raised from the ground where he had fallen in a spasm, with confirmed tetanus. The next day the spasms were frequently repeated, and especially affected the muscles of respiration and deglutition.

On the outside of his left arm, just above the elbow, there was an ill-conditioned, circular, hard-edged, indolent ulcer, about the size of a dime, extending through the skin to the cellular substance. The surrounding parts were much hardened and thickened. The ulcer occupied the spot where the spider bit him: it was cauterized at this time with lunar caustic.

He died early on the morning of the thirty-third day from the bite.

During the paroxysms of spasm his pulse was very frequent, full, and hard; the muscles of his throat and mouth were greatly contracted; and when the paroxysms subsided, copious perspiration followed. His forehead and whole body were cooler than natural. He had taken four ounces of castor oil, but without effect; it is probable, that the effort to go to stool renewed the spasms, which of course prevented the evacuation of the bowels. He had been costive for some time previous to the appearance of the locked jaw, and discharged very little water during the disease.

Attempts to drink, touching his body, moving it or any of his limbs, frequently caused a renewal of the spasms; these were evidently in the form of opisthotonos, though not to so great a degree as I have seen from other causes.

OBSERVATION XVI.

Tetanus from Cold.—A man was brought to the hospital, (in New Orleans,) on the sixth day after his exposure to bad weather. He walked to the house supported by a man on each side. His jaws at this time were nearly rigidly locked, allowing them to be opened just far enough to push the end of his tongue between his teeth. Fits of spasm came on and lasted for a short time, when the jaws became more perfectly locked, relaxing to the degree above mentioned when the fit

subsided. The fits came on frequently, sometimes twice, thrice, or oftener, while I was inquiring into the symptoms; the muscles generally becoming contracted, more especially those of the abdomen. In general he was rather bent forwards, which was a voluntary effort, for on the onset of the spasm he was thrown from this position and drew nearly straight, but he would catch himself, as it were, and soon bend forward again; when he walked his legs were generally a little bent at the joints. He complained of pain in the scrobiculus cordis only when the spasms were present.

He took laudanum and antimonial wine, and vomited after it; the next day he took several doses of laudanum, and also calomel and jalap, which operated several times. The day following he took several doses of laudanum of forty drops each. The spasms grew rather worse.

On the tenth day of his disease, he had several evacuations from the bowels, of a thin, brownish, bilious appearance. He was much weaker; his tongue moist and coated, though only the top of it could be seen, as the jaws were too firmly locked to allow it to be thrust out. Had a mercurial taste in his mouth, but had the same three days before he took calomel. His pulse was frequent and soft, the frequency being much increased during a spasm. Perhaps the repetition of the spasm prevent it from subsiding to the natural degree of action. The eyes seemed clearer and more open than heretofore, as the lids themselves have hitherto participated in the general spasmodic contraction.

The spasms often extort from him a sort of noise or shrill grunt, but not a very loud one. A folded mattress was placed between his feet and the foot posts of his bed, to prevent his lower extremities from being extended by the spasms, as they are then very painful: he therefore keeps them flexed and lies on the broad of his back. For a day or two he sat up chiefly as he felt easier in that position; sometimes he walked about the room at a slow pace. He complained most of a pain in the lower part of the abdomen. The belly was uniformly tense and the fleshy part of the abdominal muscles seemed swelled from the contraction. During the spasms he

now complained of pain about the navel, and pressure on this part would renew the cramp.

The spasms were not at any time very violent: they affected the muscles of the body generally with rigors, but did not materially affect those of respiration or deglutition. The muscles of the face, mouth, breast, belly, penis, upper and lower extremities were most affected. The arms were flexed at the shoulders, and at right angles at the elbow: the wrists were extended, the hands flexed, and grasped at objects near them when the cramp began. When he attempted to make water, the cramp was very apt to seize him, and prevent him from discharging it for a time.

On the twelfth day the fits were not so frequent, but the spasms were somewhat violent, the jaws being permanently locked, and the pulse much weaker.

The paroxysms were repeated with variations of duration and violence until the eighteenth day, when all the muscles remained rigid except those of his upper extremities of speech and deglutition. He could lie with more ease on his side, and the spasms only recurred in twitches. During all this time he was taking occasional doses of calomel, and large doses of laudanum proportioned to the violence of his spasms: his diet consisted of mush and milk.

On the nineteenth day he began to improve, and the laudanum was suspended, and a copious diarrhœa followed. He then narrowly escaped from a dysentery, but by the use of castor oil was soon restored to health.

OBSERVATION XVII.

Tetanus from a burn.—Hagar, a negro woman, an habitual drunkard, burnt the thumb of the left hand, which had not healed, though she continued to use the hand at her work, which was principally that of washing clothes. On the morning of the first appearance of the disease she prepared breakfast as usual. At this time a peculiar twist of her jaw was perceived, though she made no complaint. Soon after she was missed, and being sought, she was found in a field, lying on some sugar canes in a state of spasm.

I found her at two P. M. lying on her back in bed; she had frequent attacks of spasm which affected her whole body and made it rigidly straight, her arms were flexed and drawn up towards her chin—the eyes turned up, and sometimes to one side—respiration hurried. The muscles on one side of her face would be violently drawn up, and her mouth distorted—then those of the opposite side would undergo the same changes. The spasms subsided and she remained relaxed for a very short time, and then recommencing continued as before, being very frequent in their recurrence; she seemed insensible, though during a spasm I thought she endeavoured to utter some sound.

During a spasm and on a remission she perspired freely—her warmth was generally natural: the pulse was quick and full at this time; much hurried during the fit.

Immediately after a spasm I cut off the thumb where it joins the metacarpal bone, or near to the palm of the hand, but she seemed not to feel it. She then took xl drops of laudanum, and afterwards had five spasms, the last of which was very violent. For an hour and a half following she remained free from spasm—during this time she slept, though somewhat restlessly. Before leaving her I called aloud to her several times, she shook her head and seemed to answer indistinctly, but did not speak or manifest any greater degree of sensibility. Her eyes looked rather dim, as if her brain was affected.

I now obtained a view of her tongue, which was dry and of a brownish colour on the top. She swallowed tolerably well, and the muscles of deglutition did not appear materially affected. She breathed hard during the spasms, and the mouth was closely contracted. Her back was not so curved by the spasm as to render the belly prominent, nor was her head thrown violently back towards the shoulders—but a general balance of muscular action existed, which held her spastically extended on her back. Her face was sometimes turned to one side: her eyes were generally fixed upwards, or obliquely distorted, so that the whites were chiefly visible.

The stump of the thumb was dressed with lint dipped in

spirits of turpentine, and during several days before suppuration began, she continued to have spasms of various degrees of violence. She was occasionally delirious, and sometimes costive, though easily operated on by medicines.

She took laudanum and calomel according to circumstances, and occasionally seemed to be improving. Her disease continued from the twelfth of November to the twenty-seventh of December, in this changeable condition. On the second or third of January she became worse, and a large gangrenous ulcer was discovered over the sacrum, produced by her long confinement—sympathetic fever ensued, and death ended her miseries.

CASES OF DYSENTERY.

OBSERVATION XVIII.

R. G. a native of New Jersey, aged forty-three, much emaciated, came into the hospital 25th September, with fever, which soon left him. His appetite was moderately good, and he appeared to be convalescing. At this time fever, with dry skin, came on; he never had complained that his bowels were irregular. He took an ounce of castor oil, and after its operation his bowels continued to be loose, and his discharges fetid: his pulse gave indications of fever at night, but the skin was not warmer than natural. He took various astringent and tonic medicines, and was kept on a diet. On the morning of the 28th of October, I remarked he was in a copious and rather cold perspiration, was very quiet, and enveloped in blankets; he made little complaint, said he felt drowsy: died at 2 P. M. the same day.

Dissection.—Left *lung* natural; right adhering in many places to the mediastinum, diaphragm and pleura.

The *stomach* was large, the internal coat unusually large. Near the pylorus, and on the back part or smaller curvature, there was something like a callous ulcer of the size of half a dollar. The edges of this ulcer-like space were high and hard, surrounding a rather deep and rough depression. In other parts the stomach was firm, but in this it tore with ease. For

some time I could not distinguish the pyloric orifice, it being closely contracted, requiring some force to pass a finger through it. The borders of the pylorus seemed to be more permanently strictured than could be produced by mere muscular contraction, as they felt hard.

The large intestines were inflamed considerably on the inside, and particularly towards the lower part. The liver was small and flabby.

OBSERVATION XIX.

W. B. native of Baltimore, aged twenty-five, entered the hospital Sept. 25th, was much emaciated and feeble, but could walk about when he came in. He had before been in the hospital, having dysentery in a mild form.

He now had extremely frequent dysenteric stools, tongue moist, pulse weak, much pain of abdomen, appetite gone. Various remedies were administered, chiefly castor oil. He seemed to derive most advantage from a decoction of oak bark. His diet was very light, boiled soup, with a little vinegar,* three times a day, under which he appeared to get better. He continued to labour under this disease, in different degrees of violence, for forty-three days from his entering the hospital. He then died, having been delirious the day preceding his death.

Dissection.—Lungs natural; *heart* small and sound.

The peritoneum was covered by a peculiarly glossy and greasy feeling moisture, such as I had not met with in any recent dissection. There was no superabundance of fluid in the cavity of the abdomen. The omentum totally destitute of fat, beautifully delicate, and resembling fine gauze.

The *stomach* was of good size, and high coloured on its inside. The villous coat was thickened, and of a curious

* In three instances I very nearly destroyed the lives of dysenteric patients, by allowing, at their solicitation, the use of a small quantity of *vinegar*, which induced the highest aggravation of symptoms. This increase of disease and danger so uniformly following the use of vinegar, that I should believe it always an improper substance for dysenteric patients. J. D. G.

hard texture near the pylorus, and stained of a brown bilious hue: the pylorus itself seemed thickened in all its coats. There was a considerable quantity of a pale greenish-looking fluid in the stomach.

The upper part of the *small intestines* contained some of the same matter; their internal coat was inflamed. The *large intestines* were greatly inflamed throughout their length down to the rectum, and contained a fetid straw-coloured matter.

The *mesenteric glands* were much enlarged, also the glands near the spine. Neither the iliac nor external lymphatic glands seemed enlarged. The *pancreas* had so dwindled away that I had some difficulty in identifying it.

OBSERVATION XX.

A negro man, forty years of age, had been for some time labouring under dysentery of a bad character, without external fever. Notwithstanding all the remedies used, he died on the 11th day after I saw him.

Dissection.—Lungs sound; pleura covered by a disagreeable clammy moisture, unctuous to the feeling.

The *small intestines* were tender, and easily torn to pieces. The *large intestines* were highly inflamed, and could with slight force be torn to pieces like old rags. The colon and lower part of the rectum were most diseased. The other viscera showed nothing remarkable.

OBSERVATION XXI.

C. F. native of Virginia, tall, fair, and florid, entered the hospital on the 17th of March.

Symptoms.—Had very frequent, watery, bloody, fetid stools, with much pain about the navel, which afterwards removed to the lower part of the belly. Pulse quick, small, and hard; but sometimes rather full and soft. It generally had a very peculiar tenseness, apparently sympathizing with some very diseased part. The tongue at first coated with whitish matter, which disappeared after bleeding and purging, but returned again of an ash hue; it was always moist. The bleedings did not affect the pulse, though he was reliev-

ed from the pain. He died eleven days after entering the hospital.

Dissection.—The *peritoneum* felt and looked as if not far from sphacelation, being not firm, shining, and watery, as in most cases, but soft, cloudy, and unctuous. In the lower part of the abdomen, just above the pelvis, there was some brownish-looking matter.

The *stomach* was much diseased; a quantity of coagulated blood was found at the lesser arch, outside of its coats, among the cellular and vascular substance: there were spots of coagulated blood between the coats of the stomach, and its internal coat was inflamed.

The *small intestines* contained a very offensive fluid. Adhesions existed among the intestines generally, which were easily broken, resembling paste or glue not yet hardened. The *large intestines* were exceedingly disfigured by disease; blue, ulcerated, and thickened on the inside, with unnatural lumps and depressions. On the outside accretions of new matter deposited by diseased action.

The *liver* larger than natural, contained a small abscess in its substance just under the gall bladder; this abscess filled with good-looking pus. The liver somewhat gorged with blood. *Gall bladder* small, and containing about one-fourth of the usual quantity of bile. Other viscera not remarkable.

There was a middling-sized aneurism of the arch of the aorta, commencing by a larger exit of the artery from the heart than is common with some thin plates of bone on the inside of the arch.

DISEASE OF THE STOMACH, &c.

OBSERVATION XXII.

W. S. native of New York, slender, delicate, suffering from chronic pains in the head, was admitted to the hospital on the 21st of May. The pain of the head accompanied by difficulty of passing water and occasional looseness of the bowels. The difficulty of making water was so great, that I stated his disease to be dysuria in the hospital report. It did not appear

to be owing to stricture of the urethra, for he sometimes passed water freely: he kept a small gum elastic catheter under his pillow always, with which he would draw off his urine and relieve himself of pain. He said the catheter entered the bladder with ease. The urine appeared to be retained in the bladder from want of power to expel it.

He was pale, low-spirited, and emaciated, when he entered the hospital; had two or three old scars on his forehead. He complained of pain in that part, and also in the lower part of his belly. He occasionally took flaxseed tea, and relieved himself by the catheter; after taking a dose of salts he discharged water freely by the urethra. Finally, looseness of his bowels came on; he did not then complain of dysuria or head-ache, but said that he was much relieved. He said that eating injured him, and therefore avoided food. The looseness existed for some time; he had not many evacuations during the day, but they were very frequent at night. His skin was generally cooler than natural; the pulse slow and weak; tongue clean, respiration undisturbed. He often lay awake at night, when most of the other patients were asleep, resting his head on his hand and leaning on his elbow. A slow and mortal disease was evidently preying on him—his appetite failed—his strength gradually departed, and the glimmering taper of his existence was suddenly extinguished, about two in the morning of the 7th of December.

Dissection, ten hours after death.—Skin closely contracted to the whole body.

Lungs both closely adherent internally to the mediastinum —externally adherent to the back part of the pleura costalis. Both lungs adhered to the diaphragm, by a small spot, however, where the mediastinum and diaphragm are connected, for the lungs were contracted in width very much, so as to seem flat. Externally they were covered by an opaque, rough substance, the result of some previous inflammation. There was also a large quantity of greenish-yellow water in both cavities of the chest, perhaps not sufficient to oppress the lungs, as the patient never complained of his chest. The pericardium also contained a good deal of a similar fluid.

The omentum was thin and delicate. The cavity of the abdomen had a very unpleasant smell, resembling that from the abdomen of dysenteric patients, and there was a considerable quantity of slightly greenish-yellow water in the cavity. The *stomach* was rather small, and looked natural on the outside; on the inside its villous coat was very thin, weak, and tender, coming off like mucous from some places. There were numerous whitish mucous pieces mixed with a few dark curdled or coagulated particles in the cavity of the stomach, resembling those found in some stomachs after black vomit. The floating portions were evidently parts of the villous coat of the stomach, which had come from the thin places above mentioned. One or two spots on the inner part of the stomach looked slightly inflamed or reddish.

The small intestines were red on the inside in different places; towards their lower part were several dark-looking eating ulcers, that seemed to have destroyed the villous coat at those places. These ulcers felt somewhat hard, and even appeared dark when the intestines were examined from the outside.

All the *large intestines* seemed diseased and ulcerated on the inside. The *cæcum* was so diseased, contracted, and distorted, that it looked very little larger than the ilium entering it; the ilium was enlarged. The rectum and colon were most diseased of any part of the intestinal canal. The sigmoid flexure of the colon, and the upper part of the rectum, were very much thickened in some places, and in others very thin. Their internal surface was deeply ulcerated. They were very tender and easily torn where most ulcerated. The large intestines contained a darker fluid than the small ones.

The *liver* was small, very loose and flabby, of a brownish-red or brick-dust colour, having throughout its substance numerous paler coloured spots, generally and equally diffused. The gall bladder contained thick, ropy, or viscid bile, of a dark colour, more tenacious than any bile I had before examined.

The *spleen* was of ordinary size, though flabby, as were the kidneys.

[To be continued.]

ART. III. *Note on the Actions of the Muscular System.* By JOHN D. GODMAN, M. D.

DURING a great lapse of time, the muscular system has been carefully studied by numerous intelligent and acute observers in all countries where science has been cultivated, yet, notwithstanding their important labours, much remains to be known and explained relative to the structure of the muscles, and their modes of action. It is not with an expectation of supplying what is wanting to complete our knowledge of the muscular system, that this note is written, but to invite attention to some interesting particulars which have been singularly overlooked, by those who have heretofore treated of muscular action.

However rough and irregular the skeleton may appear when entirely denuded, it is most admirably formed for giving support and proper attachments to the soft parts designed for the growth and motion of the frame, and in the living condition, the adaptation of the soft textures to the bony fabric is productive of every variety of beautiful outline, whether the body be in a state of exertion or of repose.

In various parts of the system, beauty of configuration is obtained at the expense of power; the motive instrument is not placed in a situation where it can exert the greatest possible degree of force, neither is the lever it operates on the most advantageous for raising a given weight: still the effect is produced with the least sacrifice of convenience and beauty, and all apparent disadvantages are fully compensated by the combined action of different muscles. This is very evident when we reflect that the lever of the third order is the one most universally employed in the human body—the lever itself being the least efficient of all, yet allowing an arrangement of muscles, &c. about the bone the most conducive to symmetry and convenience, while the want of absolute power from the use of this lever is compensated by the greater number of muscles brought into action, and the much greater variety of motions to be performed in consequence of the peculiar relations of the bones.

In addition to the general attention to symmetrical arrangement displayed in the muscular system, there are very numerous instances of wonderful design exhibited in the combinations effected for the purpose of modifying and directing muscular action, and to these I more especially wish, at present, to refer. The study of these modifying causes opens a wide field of observation to the physiologist and rational anatomist, and impart to the muscular system a degree of interest sufficient to repay one for all the labour endured in gaining an acquaintance with its minutiæ.

It has no doubt forced itself on the mind of every one who has attempted the study of anatomy, that the mere enunciation of a muscle arising at one point and being fixed to another, is, to say the least, a very dry and uninviting task for the memory. When such an enunciation is coupled with an apothegmatic sentence, declaring the use of the muscle, as a general rule, it is received as a thing to be believed, because it is said, rather than as a proper consequence of the origin and insertion before stated. There is a great deal wanting to the establishment of a proper conclusion in the mind of the learner, and for a good reason, the action ascribed to three-fourths of the muscles could not possibly take place, if it were not for the peculiar causes which modify and direct the exertion of their powers. These, both in books and public lectures, are as entirely left out of sight, as if they did not exist, or rather as if they were utterly unknown to writers and teachers; the latter inference may be considered fair, for we believe that no man knowing the circumstances would pass them by in silence.

The circumstances modifying muscular action have been my favourite study for some years past; they have led to all the observations relative to the fasciæ, heretofore published in this journal, and to all the discoveries made known relative to the capsular ligaments of joints, &c. in my "Anatomical Investigations." I shall at this time take a view of the modifiers of muscular action, under the following heads:—

1st. Fasciæ and sheaths.

2d. Position in regard to bones; relation of muscular fibres to tendons.

3d. Modifying muscles.

4th. Modifying tendinous connexions.

5th. Special modifying constructions; annular ligaments, trochleæ, &c.

1st. *Fasciæ and sheaths.*—The fasciæ covering the extremities of the body will be the fairest exemplification of this part of our subject, because they are the most obvious and generally known. They are strong, dense, and inelastic fibrous membranes, stretching from the bones over the muscles so as to give them an uniform external covering, and thus far the fasciæ were studied previous to my researches. In addition to the external covering, sheets or layers are sent off from the great exterior sheet, by which each of the muscles is enwrapped or included in a distinct sheath, the layers of which terminate on and around the joints for the formation of their capsular ligaments. In consequence, the muscles thus covered, instead of swelling during their contraction in a single mass, resisted only by the general external covering, contract and swell within their own particular sheaths besides, and these being fixed to the bone as well as to the external fasciæ, direct the force of the muscle to the greatest possible advantage. The same circumstance of the sheaths for the individual muscles being formed from the great common fasciæ, enables us to understand how muscles apparently very similar in place and appearance, are capable of performing very different actions.

Let us, to make the idea clearer, consider some of the muscles individually. The *sartorius* arises from the anterior superior spine of the ilium and is inserted into the tuber of the tibia, its use being to cross the legs on each other as is done by tailors when seated at their work, whence the muscle has its name. But the sartorius is the longest muscle in the human body—its origin is very nearly over the median line of each thigh—to reach its insertion it passes under the inside of the knee to arrive at the tibia. When the muscle contracts it makes an effort to straighten itself, and if it were not forced by some cause to contract in the line correspond-

ing to its course while in a state of repose, it could not produce the movement above mentioned. What is this necessary modifying power? It cannot be the general or external fascia lata—because, if this were all, it might compress the muscle during its contraction, but could not prevent it from being drawn towards the middle of the thigh, or even from starting over the inner condyle of the femur. On examination, we readily discover the modifying cause to be the sheath or double layer of fascia in which this muscle is included, and this together with the general fascia so binds it to its place as to prevent it from starting in any direction, or producing inconvenience or deformity. The efficacy of the sheath is distinctly manifest in this case, but not more so than it is in all the muscles belonging to the extremities.

There are a few instances where muscles have their actions modified by the agency of a single sheet of fascia on their exterior, though in these cases the term aponeurosis is most applicable to the modifying membrane. Such is the aponeurosis of the temporal muscle, the palmar and plantar aponeurosis, which are the only parts not belonging to the great general fasciæ of the body. The mass of the temporal muscle arises on the side of the skull, but a layer of muscular fibre concerned in modifying the action of the whole muscle, arises from the inner surface of the aponeurosis, external to the beautiful tendon of the temporalis. These fibres, generally slighted or overlooked in the description, and almost universally cut away in the demonstration of this muscle, serve the purpose of aiding the aponeurosis to resist the swelling of the muscle, by contracting *from* its internal surface towards the tendon, or the skull, at the same moment that the powerful part of the muscle is contracting and swelling outward against the aponeurosis. The aponeurosis of the palm serves a very important purpose, not only by strengthening the connexion of the bony structure, but by binding down all the tendons flexing the fingers, and compressing the inter-osseous and other palmar muscles situate beneath it. The plantar aponeurosis bears a very striking resemblance to the fascia lata in its structure, and relation to the muscles, and to the temporal aponeurosis in

the manner of giving origin to muscular fibres. It forms three grand divisions, in the first place to embrace the central, external, and internal muscles of the sole, and on the inner surface of the central portion the flexor brevis digitorum pedis, derives a very considerable part of its origin.

If the coverings of the scapular muscles were not to be traced continuously with the brachial fascia, we should be disposed to class them with the temporal plantar and palmar aponeurosis, as they are in various circumstances analogous to them, being much thickened by successive additions of tendinous fibres, and because the infraspinatus has a series of modifying muscular fibres arising from the inner surface of the fascia. This attachment of muscular fibres is very different from what we observe in the origin of the muscles of the forearm and leg, where a part of the main body of the muscle arises from the fascia; in the case of the temporalis and infraspinatus it is a layer of fibres distinct from, and external to the common mass of the muscle, and serving the purpose heretofore specified.

2d. *Position; relation of fibres to tendons, &c.*—The effect of position as a modifier of action, may be very fairly illustrated by the origins of the *flexor longus pollicis*, and the *flexor longus digitorum pedis.* The long flexor of the great toe, arising from the posterior and inner part of the fibula, and passing under the inner ankle to its insertion, flexes the great toe in a line corresponding with the inner edge of the foot, or a line drawn from the under surface of the toe to near the centre of the heel. The long flexor of the toes, on the contrary, rising from the outer and back part of the tibia, and running to be inserted in the smaller toes, contracts so as to draw them inwards, or towards a line obliquely crossing the sole of the foot from the outer to the inner side. It would be natural enough for one who was unacquainted with the structure, to expect that the common flexor of the toes should rise from the bone most immediately in a line with the toes to be flexed; that the flexor of the great toe should come from the tibia, and not from the fibula, and the contrary of the common flexor. We shall hereafter see some addi-

tional modifying circumstances connected with these two muscles of great importance and beauty. An instance of a corresponding arrangement may be observed in the relative positions and actions of the extensor longus, and extensor brevis digitorum pedis. Other instances of the adaptation of situation to the direction of action will present themselves to any one engaged in studying the subject.

The relation of muscular fibres to the tendons through which they are to act, is another admirable provision for the modification, or rather the direction of their action. This is beautifully seen in all the penniform muscles, especially those belonging to the motions of the foot. They arise by narrow origins, and their fibres run obliquely outwards to receive a tendon on the edge of the muscle, and not at the interior extremity. Hence, as the successive portions of these muscles come into action, the motion of the foot is effected, and the whole tendon is more and more closely drawn in towards the bones. From the very nature of the space the tendons of the upper part of the foot have to traverse, they could not under any other circumstances act to advantage, although they were furnished with fasciæ and annular ligaments. Another excellent instance of modification, owing to the relation of fibre to tendon, may be observed in the *semi-membranosus*, one of the great flexors of the leg on the thigh. The origin of this muscle from the upper and posterior part of the tuber ischii, is a broad flat tendon, lying between the biceps and semitendinosus. As it is passing through the thicker part of the thigh this flat tendon has the fleshy fibres attached to it, beginning by short fibres running obliquely, gradually growing thicker and longer for a few inches; then, shortening again, with the same obliquity of fibre, the muscle receives the terminal broad tendon, which is to be inserted into the inner and back part of the head of the tibia. Hence this muscle is able to co-operate in the flexion of the leg on the thigh, bringing it directly backwards, and at the same time by its figure, aiding in giving symmetry to the thigh, whereas, if its fleshy fibres were direct, or corresponding to the course of its origin and insertion, it could do neither.

3d. *Modifying muscles.* This is a very extensive source of modification to muscular action, and the design of the modifying portions is unequivocally evident. We shall select a few of the most obvious instances as sufficient for the present. The long flexor of the thumb arises on the upper part of the radius below its tuber, and for a considerable distance along that bone towards the wrist. The fibres are necessarily penniform, and the tendon received on the outer edge of the muscle; according to what we have observed on the penniform muscles, this arrangement will draw the tendon more immediately toward the bone, and if this arrangement were the whole of the muscle, the flexion of the thumb could not take place as advantageously as it now does. But a modifying muscle, having direct fibres and terminating in a distinct tendon acted on by all its fibres at once, arises from the internal condyle of the humerus and is fixed into the commencement of the tendon belonging to the radial or penniform portion, and as its origin is much more favourable to the proper flexion of the thumb it modifies the action of the lower part of the muscle. It may be said that this modifying portion is not always present—this may be said of various parts whose uses are unequivocal: but this part of the muscle is not frequently absent, perhaps once in ten times, if so often.

Another and more striking instance of modifying muscle, is found in the second head of the *biceps flexor cruris*, the only muscle inserted into the fibula for the flexion of the leg on the thigh. This biceps derives its principal origin from the tuber ischii, in immediate company with the semitendinosus, which goes to the inside of the leg. Whoever examines the origin of the biceps, and observes the obliquity of this first head, compared with its insertion, will see that if this greater part of the muscle were alone, it would rather pull the leg towards the inside, like the semitendinosus, than towards the outside. But a second portion of muscle comes off from the outer part of the posterior surface of the thigh bone, beginning below the insertion of the glutæus maximus, into the rough line. This second head has its fibres running obliquely outwards and downwards, and it lays hold of the

proper tendon of the biceps on the inside; when the larger portion of the muscle contracts, this short head operates on the tendon, drawing it in the immediate line of the bone, thus correcting the obliquity of flexion which would be produced, if the upper portion coming from the tuber were to act alone.

A modifying structure having considerable analogy with this, exists in the relation of the gastrocnemius and soleus. The gastrocnemius arising from the condyles of the femur is nearly immediately in a line with the os calcis, and by the projection of the condyles, has great power in commencing the extension of the foot on the leg, though it could not from the very circumstance of the slenderness of its origin, suffice to sustain much of the weight of the body. The soleus arising from the head of the fibula and posterior and upper part of the middle of the tibia, and acting on the common tendon fixed to the os calcis, completes the action, draws the heel directly upwards and inwards in a line with the bones, and thus the whole muscle is enabled to sustain a great weight.

The last instance I shall mention of modifying muscle, is the accessory of Sylvius, in the sole of the foot. The situation of the long flexor of the toes has already been referred to, and it has been stated that the object of the flexion is to bring the toes downwards and inwards; but in passing under the os calcis from the posterior part of the tibia, the tendon passes rather obliquely across the sole, and would draw the toes too directly or violently inwards. This evil is prevented by the intervention of a small but strong mass of flesh, arising from the sinuosity on the inside of the os calcis, and terminating by an oblique insertion into the tendon of the long flexor just where it separates into four tendons for the lesser toes. This accessory muscle contracting in the direction of a straight line drawn through the middle of the sole, at the time when the long flexor tendon is drawn immediately inwards, produces that modification of action which is intermediate to what either portion would separately produce.

4th. *Modifying tendinous connexions.* These will be sufficiently obvious to every anatomist; it will be enough to

refer to a few of them. Among the most important may be mentioned the splitting of the tendon of the obliquus internus abdominis, which, with the external, oblique and transversalis, constitutes the sheath of the rectus abdominis. This muscle, in consequence, has its power of flexing the trunk vastly increased, inasmuch as it is affected by every degree of contraction which occurs in the other abdominal muscles, at the same time that its own contractions are performed. In addition, this muscle is broken into portions by tendinous matter, which gives it something of the character of several distinct muscles.

There is a strong tendinous connexion existing between the tendon of the long flexor of the great toe, and the tendon of the long flexor of all the other toes. This tendon enables the flexor of the great toe to participate in the modifying influence exerted by the accessory muscle of Sylvius, recently mentioned under the 3d head. Various other instances will be recollected, more or less analogous to these.

5th. *Special modifying constructions, &c.* The most beautiful of these are the trochlea in the orbit of the eye for the obliquus superior, and the hook on the internal pterygoid plate of the sphenoid bone for the circumflexus palati, both of which are so obvious as to need nothing beyond a mention. The interposition of the patella, by which a pulley is formed at the knee joint, and of the sesamoid bones, occurring in the tendons of the short flexors of the thumbs and great toes, are also well known.

The annular ligaments of the wrist and ankle, are also peculiarly worthy of attention as modifiers of muscular action, and without which our present construction of muscles would be almost useless. If any one wishes to ascertain how far these instruments direct the action of muscles, let him cut them through, and he will at once see from the starting forwards of the tendons, that without the aid of these annular ligaments, the motions of the extremities could not be properly effected. The same principle is resorted to by nature for confining the tendons of the fingers in place, only that in

this case the material used is much stronger than that of common annular ligament.

I have not leisure to pursue these investigations further at this time, and am conscious of their manifold imperfections, yet I hope that these remarks may not prove uninteresting to those who are engaged in the study of anatomy, because they appear to me to have a very useful bearing on the physiology and pathology of the muscular system. Some happier genius, by a more extended inspection of all the existing relations of the muscles, may be enabled to explain very many circumstances which now appear dark and difficult, concerning their functions.

ART. IV. *Observations on the Winds, and the Sickness amongst strangers in Havana, from August*, 1821, *to September*, 1822. By DANIEL OSGOOD, M. D.*

IN 1821, after the sun had been declining two or three weeks from the tropic, nearly under which the city of Havana is situated, the season began to be more healthy than it had been a short time previously. The wind had prevailed from the east, or the west along the coast; but at the latter end of July it began, and continued for a while, to come alternately, by day, from the open sea, on the north, or the north-east, and by night from the land on the south. The weather mean time was neither remarkable wet nor dry; near the last of August it became more calm. With this change

* We are indebted for this communication to the author of a well-known treatise on the Yellow Fever of Havana, which appeared some years ago. As an appendix to that work, the present article is intended, which we with pleasure insert, as well from the deep importance of the subject, as the interesting matter it contains. It may be proper to state, that Dr. Osgood has for many years resided in Cuba, and writes on the authority of the amplest experience and observation of the disease of which he treats.—*Editors.*

occurred a few instances of fever, of a worse character than had appeared for nearly a month before; exhibiting now the symptoms of the genuine yellow fever.

After the calm and hot weather of the latter part of August, heavy showers of rain began to fall, attended with much thunder. A change of the sickness of the season took place for the better, with this alteration of the weather. Some instances of persons falling ill, however occurred, from exposure to wet. These were easily restored to health, by taking plentiful draughts of weak aromatic herb infusions, a purge of the compound powder of Jalap, and after its operation, thin farinaceous, or fresh meat-broth-diet, for three or four days. Neither mercurial nor tonic medicines were found necessary or serviceable, in the generality of these cases.

Abundance of rain had fallen in the first twelve days of September, which greatly cooled the earth and the air. Fever was now rarely seen, and not at all exhibiting malignant symptoms, excepting in the individuals who had been either neglected or maltreated in the beginning.

A violent gale from the north commenced on the thirteenth of September, and ended after having continued forty-eight hours. The winds afterwards varied, and rains occasionally fell, until the sixteenth, when the weather became settled, with breezes alternately blowing, in the early part of the day, from the land, and, in the latter part, from the sea.

The cases of the fever which occurred during these winds, required free evacuations by purging, but not bleeding; the symptoms being simply increased heat, fulness, without great hardness of the pulse, pain in the head, weakness, a bitter taste in the mouth, and a white or yellowish appearance of the tongue. It was required that the patients should neither expose themselves to a free current of air, nor be closely confined from it; and that their diet should consist only of water-gruel, or thin chicken broth. A clyster of sweetened water and vinegar was administered once or twice a day. This treatment was enjoined, a purge being given occasionally, until the increased heat, &c. had been removed; which hap-

pened in most cases by the fourth day; and after this period most of the patients were regulated by their own prudence, being left with either no medicine at all, or only some aqueous bitter preparation to strengthen the digestion; a month passed after the last gale, without the occurrence of fever with malignant symptoms.

The weather was warm and calm, between the middle of the second and the middle of the fourth week of November; before and after which periods the north wind prevailed for a few days only. While the weather was calm several cases of the yellow fever occurred. The subjects were first seized with extreme muscular debility, small pulsation at the wrists, but violent throbbing in the arteries of the neck and temples, a countenance expressive of apprehension of danger, and great heat and soreness of the stomach. The stools and urine discharged were crude at first, but after two or three days, corrupt matters were ejected, and the pulse became harder. A universal yellowness came over the body, beginning about the fifth day, and growing deeper by degrees; and a blackish substance was about this time vomited, accompanied by a hiccough. The disease terminated fatally, as early as the seventh day, in some instances; and in others, the patients held out from that day to the eleventh or later. Bleeding proved of no benefit to any at this time, neither did it appear to do harm. Of those for whom bleeding had seemed to be indicated, some recovered and some died, whether this operation had been performed or not.

Early purging proved of the greatest service. A large dose of calomel alone, and after it a dose of purging salts, and these followed by an infusion of senna, with a mixture in it of manna, cream of tartar, and magnesia, repeated frequently in divided doses, had the best effect. Blistering on the first and second days was found indispensably necessary for alleviating the uneasiness of the stomach and the head; and as soon as the heat and pains had been reduced, an infusion of gentian or some other bitter medicine with the Virginian snakeroot, were required to be taken freely.

The latter part of November, and the first days of Decem-

ber, proved very cold and stormy; after which the weather became remarkably clear, and warm for the season; and thus continued until the nineteenth, at which time a very little rain fell, and the air again grew cooler.

Numbers were attacked with fever during and shortly after this sultry weather. The sick experienced very little heat or pain; but the strength of those who finally died was greatly prostrated from the beginning; and they loathed all drinks and medicines. Whatever was taken passed off in a crude state by stool or vomit. Death took place from the seventh, or from that to the twelfth day. In most of the cases, which proved fatal, appearances indicating an erythematic inflammation, and a subsequent gangrene of the stomach and intestines, were observed. In a middle-aged, corpulent, and florid subject, on the fifth day of his fever, an inflammation appeared, first around the anus, which afterwards spread rapidly over the *perinæum* and *scrotum*, and terminated in a gangrene of the parts before death. Bark and wine, the mineral acids, and other antiseptics, astringents, and stimulants, were administered freely in some of these cases, on account of the heat being found below the natural standard, and the debility extreme. These medicines proved manifestly detrimental: none recovered to whom they had been prescribed and administered; while others became convalescent, without them, by means of free operations effected by cathartic and other evacuating medicines. The proportion of fatal cases, under this treatment, even when most timely employed, was one in three.

The weather, in the remaining part of December, was moderately variable; and slight rains accompanied some of the changes. The instances of fever were few; and of those all terminated favourably, for which purgative medicines, and clysters, farinaceous nutriments, and, lastly, slight diaphoretics, were judiciously administered.

On the last day of December, a storm of wind and rain set in from the sea, and the change of the temperature was very great. The weather on the first of January, 1822, was clear and cold, and continued so for several days; afterwards the

wind shifted, first to the southward, then round again to the northward, and alternated thus from time to time, through the whole of this month. The same treatment was practiced for the cases of fever, in the mean time, as had been made use of in the last days of the preceding month; and with the like favourable success. The months of February and March were, as they usually are in this place, boisterous; and excepting from accidental exposure, no strangers fell ill with fever, in consequence of predisposition acquired here.

Near the last of April, the weather became suddenly hot and close, and continued so, without rain, to past the middle of May. In this interim, cases of yellow fever arose, some of which proved fatal, notwithstanding seasonable medical advice was had. Bleeding and mercurial purges for the plethoric, and the same medicine without bleeding for the very slender, or the very fat, were the means found most successful for the cure.

A little rain fell in the last week of May. After the first of June showers were frequent. The rains cooled the surrounding hills, and were followed by breezes from the sea. After these changes of the weather the fever became less prevalent, and of a milder character than it had previously been. No other remedies than timely cathartics, followed by cooling aperient and unnauseating drinks and medicines, and a thin diet were required, in the treatment of the patients at this time.

The weather after the first weeks of June was very hot and dry, but not close. Several persons, in consequence of the extreme heat, were slightly delirious, without being actually inflamed, or affected with fever. By retiring from noise, and observing a cooling regimen, without medicine, fever was prevented. The contrary management brought on a confirmed fever. The patients I now had, I evacuated freely by the means of the sub-muriate of mercury and clysters, in the first day or two of their disorder; and afterwards for another day, with equal parts of the flour of sulphur and cream of tartar, in small and repeated doses, amounting to half an ounce of each, in the day. During the two or three

next days, the infusion of cinchona, with Virginian snake-root, was given, and, if the bowels were slow in their movements, manna and rhubarb were added to the infusion.

Such is my practice, at this moment, the fourteenth of June, the sun, at mid-day, being directly in our zenith; the weather dry and the sea breezes blowing, in the hottest part of the day, so as to ruffle gently the surface of the water throughout the harbour.

On the fifteenth it commenced to be wet and stormy, with interims of sunshine and calm weather; and so continued for three or four days. Numbers of the sick at this time were subject to syncope, whenever they had occasion to sit in an erect posture. The pulse was seldom quicker than eighty or ninety strokes in a minute; but the circulation of the blood was heavy, and the breathing laborious. Of fifteen patients who were treated in the manner last mentioned, three died.

Persons who had resided for several years, within the city, had fever with malignant symptoms, at this time; for some of whom the mercurial treatment was practiced, as for the strangers; by which means they recovered, to a state of convalescency, on or before the fifth day. Others, who, though but slightly feverish at first, took only simple laxatives and cooling beverages, as is the practice amongst the creoles, were left with a jaundice, for which the sub-muriate of mercury combined with opium became a necessary remedy.

Two or three days of calm and clear weather preceded the twenty-second, the time of the solstice, when a heavy rain fell which was followed by a strong south-east wind. But after the sun had past this latitude, on his return towards the south, the weather became showery and irregular. Calms and squalls, sunshine and rain, alternated, from this time, to the thirteenth of July. The fever began to be more prevalent in the last week of June, and so continued to the middle of July.

It rarely, however, attacked any but the worst subjects for it: such as youths of about the age of puberty, men and women near to the change of life, from the middle to old age,

and such others as in a cold climate would be regarded as the most healthy. The predisposition to the disease being very strong, in these subjects, in the like degree the disease proved to be violent.

From the thirteenth to the twenty-second of July the weather proved more cool than it had been for some time before, a northerly wind blowing steadily, and tempering the heat of the vertical sun.

The fever which took place during this interval, happened in most instances, after a sudden suppression of the perspiration, from exposure of its subjects to a strong current of air. These patients by lying out of the air, in a spacious room, drinking freely of chamomile infusion, and by taking from five to ten grains of the compound powder of ipecacuanha, to restore the perspiration, and afterwards a dose of the compound powder of jalap or scammony, threw off their disorder. But if such treatment was neglected a confirmed fever which terminated in the black vomit ensued.

On the twenty-third of July the weather became showery, and sultry. On the twenty-sixth the wind changed to the north-east, and blew in a steady current through the day, excepting a part of the morning, to the twenty-ninth, after which showers and calms alternately occurred till the thirty-first. Then for four weeks the sky was clear, and the sea or land winds blew, as is usual in the hottest weather.

For a month past, this being the first of September, of all the patients I have visited, twenty-nine in number, belonging on board of merchant vessels, but few have had very bad symptoms, and not one has died. The medicines employed for promoting the circulations, secretions and excretions, in the minuter vessels, after evacuating the larger organs, in some few instances both by bleeding and purging, and in most by purging alone, was the sulphuret of potass given every sixth hour, in doses of from ten to twenty grains made into pills with castile soap and powder of liquorice.

In the latter part of August the weather was excessively hot and dry.

No rain had fallen from the last day of July to the fifth of

September. The sickness on the first of September began to be much more violent. Of ten patients on board of one vessel, three died.

The prevailing fever of Havana during the time of the occurrences above related, was of a milder nature, for the most part, than it usually is. Fewer calms and less prevalency of the winds from along the coasts, have meantime been experienced.

ART. V. *Remarks on the History of the Absorbent System.* By C. D. MEIGS, M. D.

THE celebrated DR. WILLIAM HUNTER thought it less surprising that HARVEY discovered the circulation of the blood at last, than that mankind should have remained so long ignorant of that noble basis of our modern pathology; but it seems to me a not less wonderful circumstance, that we were so long unaware of the existence of a peculiar absorbent system, the functions of which being of prime necessity in the animal œconomy, and inconsistent also with the then received ideas of the mode* in which blood was supplied to the system, ought surely to have attracted the attention of the medical public at a much earlier period than the commencement of the seventeenth century; yet so blindly obedient were our forefathers to the Hippocratic and Galenical theories of physiology, that during a lapse of about twenty centuries, nothing, or worse than nothing, was known concerning them. There are abundant proofs of this unhappy deference to authority. BARTHOLIN's letter to WALÆUS, of 16th September, 1641, dated at Montpelier, which he visited on his journey to Italy, says, "there is not one among the doctors who ac-

* The Anadosis and Diadosis, of which Bartholin, while urging the doctrine of the new lacteals, exposes the inconsistency. Quia alia & diversa vasa ad *ανάδοσιν* & *διάδοσιν* fabricata est, venas nempe lacteas, diversas a meseraicis numero trunco, &c.—*Epistol. Centur.* I. 26 p.

knowledges the lacteal veins; so much are they taken with the authority of Galen, that they contend for it as for very liberty and belief, to the neglect of the recent experiments."*

One of the most singular instances of reliance on GALEN, may be found in AMBROSE PAREY, lib. iv. chap. xii. in which, speaking of the transmission of the blood from the right to the left side of the heart, he says, "Galen thinks that there be certain holes in the partition made for that purpose, and verily there are such, but they are not perforated."†

It is still more surprising that this system should have remained so long unknown, inasmuch as both ERASISTRATUS and HEROPHILUS had seen lacteal absorbents, and Galen who was a man of great industry and brilliant talents, constantly engaged too, in living dissections, must have seen them frequently; it is on his authority we learn that they were known to Erasistratus,‡ yet strange to say, he made no use of this information, and it is due to his neglect that from about A. D. 150 to 1622, the lacteals remained almost wholly unknown, and that the practice of physic was deprived of all the benefit and light which would have resulted from their being made more public. The oversight, however, left to CASPAR ASELLIUS the good fortune of bringing the important fact before the profession, to the great benefit of science, and to the reaping the reward of that immortality to which so great a service has justly entitled him.

* "Venas lacteas qui admittat, inter Doctores nemo est, adeo Galeni authoritate inescati sunt, pro quo tanquam pro aris & focis pugnant, ut recentiorum experimenta negligant."—*Epist. Cent.* I. p. 25.

† Translation of Parè's Works.

‡ "Nam si ventrem imum & interiorem membranam diviserimus, arterias in mesenterio plane conspiciemus. In hoedis quidem nupernatis lacte refertas; in adultis autem animalibus alterius rei plenas." Galen, lib. An. Sang. in Art. Nat. Cont. Cap. 5. This certainly is but a faint view of the matter; he says again, "Porro non solum in hoedis sed etiam alio quolibet animante, quod *liquidam in ventriculo substantiam* contineat sumes experimentum, & quo subtilior fuerit, hoc facilius in arterias resumetur. Initio igitur aiunt simulac mesenterium denudatum fuerit, arterias aeri similes apparere, postea lacte repletas conspici."—*De Admin. Anat.* lib. 7. 16. How can we account for it that they were forgotten after this.

Asellius' discovery led to very great changes in medical philosophy, and the means by which these changes were consummated, is not only a very pleasant, but a very useful study, full of anatomical instruction, and agreeable and entertaining professional literature. At least it is certainly desirable, that works of this kind should attract the attention of American physicians, of whom while we find on the one hand a very general readiness in the public to acknowledge and applaud their practical skill and dexterity, there is on the other, a not less prevalent complaint that they neglect those more ornamental departments, which have been so happily illustrated and embellished by the labours of VANDERLINDEN, LE CLERC, HALLER, VIREY, and many others, of whom it is only necessary to recite their names to verify the enthusiastic boast of HIPPOCRATES—Ιητρος φιλοσοφος ισοθεος—the philosophical physician is like a god!

I shall now proceed to the business of this essay, which is merely to give a slight outline of the history of the absorbent system, to which my attention was drawn by a comparison that I attempted to make of the state of medical practice in the half century preceding Harvey's discovery of the circulation, and the fifty years which followed that great influx of professional light. It is difficult on account of the close connection and mutual dependance of the functions to separate entirely the two subjects of absorption and circulation.

Hippocrates may with justice be regarded as the founder of the system of digestion and absorption, which Asellius happily overthrew after it had stood for two thousand years. Probably it was he who gave origin to the doctrine of elements, qualities, and faculties, and all their congeners which constitute so considerable a share of the Greek, Arabian, and European treatises of medicine to the end of the sixteenth century.

The great pivot on which his reasoning turned was *Nature*, which he also confounded or identified with heat—warmth or fire; the principal basis of all things, out of which basis, in some not very intelligible manner the four elements were produced from the chaotic mass. His idea is, that out of chaos

the greatest part of the heat having attained the uppermost place, formed the ether, which seems subsequently to be the representative of fire, or as I should say, the antetype of the callidum; out of the lowermost part was formed earth, representing dryness—that which was mid-way formed air, representing cold or the frigidum—and another part nearer to the siccum constitutes water or humidum, the moist. So that we have come to the* callidum, frigidum, siccum and humidum, the keys of that vast store of jargon which was turned out and despised after the æra of Harvey and Asellius.

It seems to me that in this philosophical system, earth, air, fire and water, are not to be regarded as simple elements, but as mere personifications or representatives of the siccum, frigidum, callidum, and humidum, for they are all remotely derived from the great element of fire, as we have seen. Thus earth is dry by the *predominance* of the elemental siccum and so on: combinations of the elements give origin to substances having the characters of cold and moist—cold and dry—cold and hot, or temperate, &c. so that all the varieties of material forms are accounted for. But we must not stop here, because to the qualities or elements, (for the terms are nearly synonymous in this place,) are necessarily appended certain faculties, which are three in number, viz. natural, vital, and animal. The natural are again subdivided into attractive, retentive, and expulsive, by which three last the whole business of digestion, nutrition, and elimination are effected. I might add here the nutrix and concoctrix faculties, but they are both merged in the retentive or retentrix facultas.

In order to be consistent with the scheme, the body is a sort of microcosm, composed of four primary humours, which are nearly representatives of the calidum, siccum, humidum,

* "Quaque erat & tellus illic & pontus & aer,
Sic erat instabilis tellus, innabilis unda
Lucis egens aer: Nulli sua forma manebat
Obstabantque aliis aliud, quia corpore in uno
Frigida pugnabant callidis, humentia siccis,
Mollia cum duris," &c.—*Ovid Metamorph.* lib. 1.

and frigidum; I say nearly, but not exactly representatives, because they are compounds, as may be seen in the following table, which I have copied out of Ambrose Parè's works, who says, "from which table it will easily appear of what kind they all are, and what the distinction of these humours may be."

Blood is	Phlegm is	Choler is	Melancholy is
of nature aery, hot, and moist, or rather temperate.	of nature watery, cold, and moist.	of nature hot and fiery.	of nature earthly, cold, and dry.
of indifferent consistence, neither too thick nor too thin.	of consistence liquid.	of consistence thin.	of consistence grosse and muddy.
of colour red, rosie, or crimson.	of colour white.	of colour yellow or pale.	of colour blackish.
of taste sweet.	of taste sweet or rather unsavoury, for we commend that water which is unsavoury.	of taste bitter.	of taste acid, sour, or biting.
of such use, that it chiefly serves for the nourishment of the fleshy parts, and carried by the vessels, imparts heat to the whole body.	fit to nourish the brain, and all the other cold and moist parts; to temper the heat of the blood, and by its slipperinesse to help the motion of the joints.	Provoketh the expulsive faculty of the guts, attenuates the phlegm, cleaving to them; but the alimentary part is fit to nourish parts of like temper with itself.	Stirs up the appetite, nourishes the spleen and all the parts of like temper to it, as the bones.

This table shows what use was made by the Hippocratic and Galenical Doctors, of the four primary humours; i. e. it shows how when they attempted to reason on any of the phenomena of the living body in health or disease, they wasted the powers of their reason in the vain attempt to make every phenomena square with the philosophy of their school; and that although they made some excellent and most careful observations as to the symptoms of disease, they could never have arrived at a sound pathology under the deadening or enslaving influence of such a system as this, which supposed that these "things natural are so termed, because they *constitute* and *contain* the nature of man's body, which wholly *depends* upon the mixture and temperament of the *four* first bodies."*

Under the same system an eminent professor says, "Alimenta calida humores calidas in corpore producendo illud calefaciunt. Ut ceparum, alliorum, aromatum, & caeterorum usus."

"Alimentorum excessus, defectus & aliena qualitas, frigidam intemperiem inferre possunt." Excessive quantity of food suffocates the native heat, whereby a cold intemperies is produced, thereby frequent crapula, epilepsy, or apoplexy is occasioned. Defect of aliment permits a dissipation of the heat of the parts; any substance of a cold nature may produce a cold distemper, as lettuce, poppy, mandragora, &c. which have a refrigerating power over the body.† This doctrine, which is derived almost immediately from Hippocrates, and which would for ever have kept us groping in vain, after its vain and subtle abstractions, was generally prevalent early in the 17th century; and, I repeat, that we are indebted to Asellius and Harvey for our deliverance from the chains of it. The doctrine of the hepatic hæmatosis was derived from the same sources. The Arabian physicians learned all their theories from the Greeks, and principally from Galen: among these was Avenzoar, whose *Taissir* I have at hand; it furnishes me with the following, which will show the ideas

* Vide Parè, chap. III.

† See Riverius, Opera, p. 49.

he had concerning the liver, ideas which are derived from Galen.

"The liver is the beginning and source of the *natural* faculties, which are the attractive, retentive, digestive, and expulsive, and these faculties are derived from the liver to the whole body and to every limb, and it is from this derivation, that the several members are able to exercise the aforenamed faculties in assimilating and uniting nutritious matter to themselves."* Avenzoar, Lib. I. 13. Cap. 7. He wrote about A. D. 827.

Averroes wrote about 1170; he says, "The chymous nourishment enters the liver by its portæ, and is decocted in those veins until it returns to the blood, and privately escapes by the great vein which is found in its gibbous portion."†

Ambrose Parè died in 1590; he was a physician and philosopher certainly of high rank in his day.

"All things which we eat or drink," says he, "are the materials of the blood, which things drawn into the bottom of the ventricle by its *attractive* force, and there *detained*, are turned by the force of concoction implanted in it, into a substance like almond butter," &c. "We term this chylus, (when it is perfectly concocted in the stomach;) but the gate vein receives it driven from thence into the small guts, and sucked in by the meseraick veins, and now having gotten a little rudiment of change in the way, carries it to the liver, where by the blood making faculty, which is *proper* and *natural* to this part, it acquires the absolute and perfect form of blood."‡

Melancthon, (de Anima,) says the sanguification is owing to the "flesh of the liver itself."§

* "Et epar est fons et principium virtutum naturalium, quæ sunt virtus attractiva, retentiva, digestiva, & expulsiva; & hæ virtutes influunt ab epate ad universum corpus, & in omnibus membris, & ab ista influentia omnia membra singulariter, dictas virtutes habent exercere, & nutrimentum membris totaliter assimilare, et eis unire." Lib. I. Tract. 13, Cap. 7.

† "Et nutrimentum chimosum, intrat in epate per suam Januam, & in illis venis decoquitur donec redeat ad sanguinem, & demum exit per illam venam magnam existentem in sua gibbositate." Lib. I. 27.

‡ Parè's Works, p. 8. § Ipsa epatis caro.

Riverius was an old man when Harvey's book was published. In the Inst. Medic. lib. I. sec. III. he says, "The purer portion of the chyle carried to the liver by the meseraic veins is concocted and changed by its heat, so that it partakes somehow not only of the redness, but even the temperament of the liver"*—that is, hot and moist.

The celebrated Adrian Spigelius died in 1626, one year before Asellius's book appeared; in his Humani Corp. fabr. Lib. VIII. Cap. XII. he gives a very explicit view of his doctrine on this point; after speaking of the process of digestion in the stomach and bowels, he proceeds, "From hence, (the intestines,) the meseraick veins and arteries draw up the useful materials; the former more, the latter less. The former in order to convey them to the liver, the latter to the spleen. These take up the most liquid, those the thicker portions. Moreover, when the chyle on its way to the liver reaches the divarication of the vena portæ, the spleen by its innate faculty draws the thicker and more terrene portion to itself through the splenic branch, in order that the more laudable portions only may be carried to the liver. In this progress the chyle undergoes some preparation, and is further elaborated both in the spleen and liver: when it has become perfect blood, its finer portions are by the anastomosing vessels deposited in the radicles of the cava, and go off, part by the ascending, and part by the descending trunk, through the former to the upper parts and to the heart, and indeed into its right ventricle, where it is attenuated, and then is sent in the pulmonary artery for the nourishment of the lungs, and then proceeds by the pulmonary veins into the left ventricle, where, (if I may so speak,) the last colophon is placed; it is further attenuated and converted into arterial blood, and thence diffused through the aorta for the support of all the parts."†

* "Purior chyli portio ad hepar per venas meseraicas delata, calore ejus concoquitur & immutatur, ejusque quoddam modo sortitur, non solum rubedinem sed etiam temperiem," &c.

† "Hinc, (ex intestinis,) venæ & arteriæ meseraicæ, quicquid utilis est materiæ, hauriunt, illæ quidem plus, hæ minus; illæ que ad hepar trans-

Parè and Spigelius are fair examples for citation, and it would be easy to multiply examples in proof of the general prevalence of the doctrine of hepatic hæmatosis previous to the discovery of the lacteals—the doctrine soon gave way after the publication of that event.*

Thus we have seen the doctrine of chylous absorption to be that the useful portions of our food are taken up by the radicles of the meseraic vessels, attracted to the liver and therein converted into blood.† A doctrine which the learned and powerful were ready to uphold with all their might, pro quo, tanquam pro aris et focis pugnant, says Bartholin; we may judge then what must have been the wonder excited by the publication of Caspar Asellius' work in the year 1627, which was entitled De Lactibus seu Lacteis Venis, quarto Vasorum Meseraicorum Genere, novo invento, Dissertatio—qua Sententiæ Anatomicæ Multæ vel perperam receptæ convelluntur, vel parum receptæ illustrantur. Mediol. ap. Bapt. Bidellium, cum figuris elegantissimis diversicoloribus, 1627, 4to. This is not I believe to be found separate in

ferunt, hæ ad lienem. Tenuius enim est quod arteriæ accipiunt, crassius quod venæ. Caterum, dum chylus ad Hepar sic contendit, et jam ad venæ portæ divaricationem pervenit, lien ingenita facultate, per ramum splenicam, crassiorem ac terrestriorem ejus partem ad se allicit, ut ad Hepar non nisi laudabiliores partes deferantur, in hoc itinere chylus aliquam præparationem suscipit, elaboratur autem alterius, tum in hepate tum in liene: ubi perfectus est sanguis, ejus tenuior pars per anastomoses in cavæ radices deponitur, & *partem per truncum adscendentem, partem per descendentem abit*, per illum, ad superiora & ad cor defertur, & quidem in dextram ipsius ventriculum, in quo attenuatur, postea in venam arteriosam distribuitur, tum ad pulmonum nutritionem, tum ut per arteriam venalem ad sinistrum cordis sinum abeat, in quo extremus colophon, (ut ita dicam,) imponitur, cum attenuetur ulterius & in sanguinem arteriosum vertatur, qui postea per aortam pro vita singularum partium diffunditur."

* "Litigatum est Jam olim inter Peripateticos & Galenicos, cuinam visceri sanguificandi munus conveniat, dum illi cordi, hi vero hepati officium illum attribuunt. Factumque est postea ut aliqui, (rejectis amborum opinionibus,) id muneris venis adscripserint."—*Glisson. de vent & intest.*

† By the "ipsa epatis caro."

the libraries here. It is bound up however with the works of Adrian Spigelius, folio, and the greatest part of it is given in Mangetus' Biblioth. Anatomica. It is certainly a very interesting work, as well for its luminous exhibition of the state of learning concerning its subject matter anterior to its own date, as well as for its natural and spirited details. I shall give here a free translation of so much as relates to the circumstances of the discovery; it is highly graphic and spirited in the original.

"On the 23d day of July of the same year, (1622,) I took a healthy fat dog for the purpose of opening him alive, at the request of some persons who wished to see the recurrent nerves. Having finished the demonstration of those nerves, it was determined that we would observe the movement of the diaphragm; while doing so, and having opened the abdomen and pushed the stomach and intestines collected in my hand out of the way, I suddenly discovered a number of delicate, very white cord-like things, dispersed in numerous branches over the mesentery and bowels. At first, thinking they were nerves, I paid not much attention to them, but soon found out my error, for I perceived the nerves belonging to the intestines were distinct from those little cords, and very different from them as to their direction; wherefore, being astonished at the novelty of the thing, I hesitated for some time in silence, while there were passing in my mind various circumstances which are discussed by anatomists concerning the meseraic veins and their office, a controversy full not only of doubts but of quarrels. It so happened that a few days before, I had read a book written on this very subject by JOHANNES COSTAEUS. In order to examine the matter more carefully, I took a sharp scalpel to cut one of those cords—but I had scarcely struck it, when I perceived a liquor white as milk or rather like cream to leap out. At this sight I could not contain myself for joy, but turning to the bystanders ALEKANDER TADINUS and the Senator SEPTALIUS, both belonging to the College of Medicine, and both belonging at this present time to the Health Office, I cried out, εὕρηκα! with Archimedes, and at the same time invited them to look at so rare

and pleasing a spectacle, with the novelty of which they were both much moved. But I was not long permitted to enjoy it, for the dog now expired, and, wonderful to tell! at the same instant the whole of that great series and congeries of vessels, losing its brilliant whiteness, the fluid being gone, in our very hands and almost before our eyes, so evanished and disappeared, that hardly a vestige of them was left to my most diligent search. Being very much surprised with this occurrence, I resolved to make another experiment. The next day I procured another dog and opened him without delay, but success answered not to my expectations, for not the smallest vessel could I find in my most diligent inquiry; and now I begun to be downcast in my mind, thinking to myself that what had been observed in the first dog, must be ranked among those rare things, which according to our Galen are sometimes seen in anatomy. Yet recollecting that this one was both athirst and unfed, I determined to try the experiment on a third dog well prepared for it. Him I opened on the 26th at the sixth hour, after he had been fed to satiety. My expectation was not deceived, except that every thing was more manifest and brilliant than in the first case. Confirmed by these two experiments, and nothing doubting concerning the matter, I gave my whole attention to the investigation and more accurate knowledge of it, a care in which I was so diligent, that not a week, or certainly not a month, passed away without a living dissection." He dissected dogs, cats, lambs, hogs, cows, "and I even bought a horse for this purpose and opened him alive." "A living man," continues the merciful Asellius, in a philanthropic strain, which nevertheless shows the direction of his enthusiasm for science, "a living man which Erasistratus and Herophilus of old did not fear to anatomize, I *confess* I did not open, nor will I ever cause an art which should preside over the safety of the whole human race, to bring such atrocious torments on any one, a crime which with Celsus I believe expiable only by the death of the criminal."

Such is his account of his inventio nova, than which nothing except the discovery of the circulation has had a happier agency in extending the bounds of medical science.

The other parts of the work are occupied with a critical inquiry into the preceding theories of chylous absorption, a more accurate description of the lacteal veins as they were denominated; and an enumeration of the advantages to be derived from the knowledge of them. Asellius did not perfect the revolution in pathology and physiology, because he did not go far enough. He committed a great error in regard to the lacteal absorbents, by leading them to the liver, which he supposed the seat of sanguification. They were supposed to go from the villous coat of the bowels to the pancreas, in and over which they were inexplicably interlaced; from thence accompanying the portal vessels to the liver, they plunged into that viscus, dividing into innumerable branches and running to every part of that sanguifying organ. "The proper action of our veins is doubtless the distribution of the chyle, and indeed its distribution to the liver."*

Asellius' book, printed in 1627, was followed by that of Harvey in 1628,† and by these two publications the profession was much excited to the most diligent anatomical researches, which produced very important results.‡

John Pecquet or Picquet, a physician of Dieppe, in France, who was among those occupied in dissections, learned by good fortune a very important anatomical fact. It was in 1649, that when examining a dog with intent to study the motions of the heart, he removed it, by dividing its attachment, he discovered a quantity of white fluid pouring out from the upper cava mixed with the blood of the vein. At first he supposed he had opened some strange abscess, as he could

* "Actio propria, venarum nostrarum, absque dubitatione chyli distributio est & quidem distributio ad jecur."—*De Lactib.*

† Exercitatio Anatomica de motu cordis & sanguinis in animalibus.

‡ Yet multitudes were too dependant on the authority of the ancients to adopt the new doctrine.

Olaus Wormius writes from Copenhagen, June 28, 1639, "Miror de venis lacteis, multos tam literatos tam celebres, sensibus & oculis propriis adeo diffidere; res tam clara, tam splendida, tam necessaria ad varias difficultates anatomicas enucleandas, quem non alliceret?"—*Epistol. Med. Cent.* I.

not otherwise account for the appearance of the white fluid: he pressed the dog's neck and other parts in order to squeeze out more of the supposed pus, but when he finally pressed upon the mesentery, which contained lacteals turgid with chyle, there came forth of the disrupted veins a great quantity, which he immediately discerned to be chyle, and thus ascertained that he had discovered an important fact in the animal œconomy. I shall not detain the reader with an account of his self-complacency on this occasion, nor with an analysis of his treatise, entitled Experimenta Nova Anatomica, quibus incognitum hactenus chyli receptaculum & ab eo per thoracem in ramos usque subclavios vasa lactea detegunter, &c. printed at Paris in 1651, 12mo. Suffice it to say, that he followed the course of the chyle from the lacteals into the receptaculum, and through the thoracic duct into the subclavian veins, and by so doing robbed the liver of its great office, by demonstrating that it was not, and could not be, the seat of the hæmatosis. But the contest did not end immediately, some staunch friends of the doctrine did not give it up at once, for even Harvey, whose habits of close observation and independent judgment had led him to the highest eminence and respectability, could not at once disenthrall himself from the strong bonds of early prejudice. A letter from Bogdanus to Bartholin, dated at London, June 17, 1655, gives an account of a conversation with Harvey, (then seventy-eight years of age,) and his friend Ent, which shows that he could not give up the old doctrine entirely. Thomas Bartholin, whose eyes had been constantly opened to every improvement in medicine, could not at first get over the hepatic difficulty: writing of Pecquet's discovery to Conringius, he says, "It is miraculous that a thing so manifest should have escaped from the view of so many ages." He cannot yet, however, quite give up the theory, because "I have frequently seen small lacteal branches which empty their contents into the liver, wherefore I cannot consent wholly to drive the liver into banishment, but believe it participates with the heart in the work of sanguification, be-

cause there is more chyle in the mesentery than can escape by those little tubes alone, which are so small in the thorax. Perhaps, therefore, the finer parts of the chyle are carried immediately by the new ducts for repairing the energies of the heart, (and hence the sudden restoration of strength after food,) while the grosser parts needing a longer concoction, enter the liver."*

From an early period the subject had engaged the attention of Thomas Bartholin, and subsequently of Olaus Rudbeck, the former a professor at Copenhagen, the latter at Upsal. This Thomas, the son of Caspar Bartholin, a celebrated Danish physician, was born at Copenhagen in 1616, and died in 1665, at forty-nine years of age. No man of his time did make greater exertions to improve the profession than this enthusiastic devotee to science. He was in every part of Europe its active patron and promoter; his extensive correspondence and journeys, placed him in close relation with the first literary characters, and gave him eminent advantages for attaining that great fund of information which he so freely imparted. His voluminous works are in proof of his great zeal and industry. He published a volume on the lacteals in 1652, and in 1653, appeared the Vasa Lymphatica Nuper Haffniæ in Animalibus inventa: & in Homine; & Hepatis Exequiæ, 4to. These ductus aquosos were first seen by him on the 15th of December, 1651, and again on the 9th of January, 1652, while dissecting a dog, but he did not advert to their peculiarity, thinking them to be lacteals, as he was busy with other thoughts; but on the 28th of February of the year 1652, in company with his prosector Martin Lyser, to whom he is willing to impart a share of the glory, he saw inserted into the liver with the portal vessels, many tubes,

* "In Hepar quoque ex mesenterio diffundi, ramulos lacteos observare mihi visus sum, unde nolim prorsus in *exilium agere epar*, sed partiri credo cum corde sanguificationis opus, quia copiosior in mesenterio est chylus quam per solas vias illas novos in thorace satis exiles traducatur. Forsan igitur, tenuior chylus ad reficiendum cor statim per novos ductus fertur, unde subita virium ab absumptis restauratio, crassior vero longioris coctionis indigus, hepar ingreditur."—*Epist. Cent.* II. 13.

distended not with chyle, but with a watery fluid shining through their coats: he informs us of his having traced them in the abdomen and in the limbs. He made some progress in ascertaining the lymphatic absorbents in man. In speaking of the discovery, he says, "these things, in consequence of their novelty, seemed almost miraculous to me, nor would I entirely trust to my own eye-sight, or to a single experiment, however exact."* Having carefully made the experiment in another dog, he was satisfied of the peculiar nature of the vessels, "Perculit animum rei novitas, & communicato consilio, favère multi & applaudère."

Olaus Rudbeck, the Swedish professor before mentioned, was born in 1630, and is said to have been a laborious student and an able man. He contended perseveringly for the honour of the great discovery, and published Nova Exercitatio Anatomica, exhibens ductus Hepaticos Aquosos & vasa glandularum serosa, nunc primum inventa, aeneisque figuris in Tab. 13 delineata. Arosiæ, 1653, 4to. Rudbeck declares in Chap. VI. that it was on the *27th of January*, 1651, while examining the hæmorrhoidal veins of a dog, that "he came across some vessels under the colon and rectum, and having more fully examined them, he found them carrying the serous fluid which they contained into the vesiculæ chylosi."† Again, on the 8th of February of the same year, while separating the œsophagus from the aorta and the spine, he found a long vessel, which he then recognised as carrying serum. On the 6th of March, 1652, he discovered a number of lymphatics, going from the inguinal glands. On the 19th of October he discovered a great many in a cat, and on the 30th in a dog, again on the 27th of April, 1653, in the thorax, probably of a human subject.

A grievous quarrel arose between Bartholin and his friends on the one hand, and Rudbeck on the other. Bartholin was

* "Miraculo vicina, res nobis visa quia insolita, nec satis oculis unicæque experientiæ quamquam clarissimæ ficloram."

† "Vasa quædam sub intestinæ colon & recto, jacentia obviam venerunt quorum ductus altius rimatus, succum serosum illis contentum vesiculæ chylosi, comperi immeantem."

accused of pirating on the discoveries of Rudbeck, and of appropriating to himself the glory which properly belonged to another. I have an account of this quarrel only in Haller* and in Sprengel,† and the Centuria Epist. so often quoted. Haller is certainly much disposed to admit of Rudbeck's priority, and even of the justice of some of the accusations against his celebrated antagonist. Nevertheless, I cannot bring myself to suppose that so good a man, and so eminent a philosopher, could be capable of such deliberate baseness as to publish the following. "When first my account of the lymphatic vessels appeared, I had no doubt that some among the learned, after carefully examining the subject, would make further developements. But while secure as to my prior claims to the honour of the discovery, I waited for the opinions of the profession, lo! after the lapse of several months, my friend Wormius sends me from Belgium two beautiful engravings, with a table of reference and a cursory review of the work, but without the name of any author. I gladly received the pictures, suspecting that some candid anatomist had not only proved the truth of my views, but had also added more information. Anxious as I was about the author, I did not learn any thing concerning him till about Christmas, when my bookseller's servant brought me his printed little work, and I now learned the name of the new author, a name of which I had never before heard or read. At first I loved the man for his devotion to anatomy, and also for the compliments he paid to my works. I wondered, however, that he should have seen my account of the thoracic vessels, and cited them too, and yet made not the least mention of the new vessels, (now in dispute,) which are so often described in my book, of which, vasa aquosa, he repeatedly attempts to appropriate to himself both the first description and discovery. Yet no mortal ever gave me the least hint that the lymphatic vessels had been seen, or described before I took the pains to do so." See also Haller's summary of the history of the lymphatic vessels, in his Phy-

* Physiologia, lib. II. † Histoire de la Medicine.

siologia, lib. II. sect. III. where in pretty round terms, he accuses Bartholin of falsehood, upon a ground too weak to support such a charge. Haller is disposed to give all the praise to Rudbeck, whose Insidiæ Structæ Olai Rudbeckii ductib. Hepat. Aquos. he cites for a letter from VAN HORNE on the subject. I regret very much that this book cannot be had here at present, but I cannot imagine it to be of much force, because the same Van Horne tells a different story to Bartholin himself.* Bartholin, in the last citation, mentions the engravings sent him by Wormius. I shall set down in a note, the verification of this fact, and proceed with my essay.†

Anatomists and physiologists were now on sure ground. They had escaped from the elements, qualities, faculties, and spirits; they knew the circulation of the blood, the proper

* A letter from Johannes Van Horne to Bartholin, dated Leyden, 8th July, 1653, soon after the discovery was published, says, "Pertulet Clariss: Wormius tuas ad me litteras, *tuumque* simul vasorum lymphaticorum *nuperum inventum*. Visum illud jam fuerat meis collegis, qui iccirco me hortati sunt, in illud ut inquirerem. Ergo cum recepissem tractatum avide perlegi, and miratus sum *hactenus* latuisse oculatissimos."—*Barth. Epist. Med.* p. 496. And yet this same man gives a certificate to Rudbeck in support of his claims.

† Wormius, dated at Leyden, 3d Nov. 1653, near four months after Horne's letter. "Scribendi ad tuam claritatem vir celeberrime, occasionem præbuit novum quoddam scriptum, in suecia editum. Quod, quoniam lymphatica *tua* vasa illustranda aliquid ni fallor conferre posse videbatur, & dubitarem an ad vestras ad huc pervenerat manus, quæ heic transcribenda duxi." He then gives a cursory review of the book, and notices the engravings, which he hopes may prove acceptable; says that all the facts have been demonstrated to him and Van Horne by the author himself, who was then at Leyden, and very intimate with him. He does not so much as mention Rudbeck's name, or refer to any claims of priority, which he certainly would have done had he known them, as he was the firm friend of Bartholin.—*Barth. Epist. Med.* p. 505.

Van Horne wrote the letter first cited, in July, 1653—more than twelve months afterwards, i. e. on the 17th of August, 1654, he writes him another epistle. "Quod historiam vasorum lymphaticorum attinet non sum inscius quantum alii sibi in earum primæ inventionis laude arroganda laborent, verum id commune est vitium: *tu tamen primus nobis autor existis*, quanquam fatendum est, D. Rudbekium omnium primo ea mihi demonstrasse"—*Barth. Epist. Med.* p. 562.

uses of the arteries, which no longer carried sanguinem spirituosum, penetrating through the septum cordis, by "holes which are not perforated," they knew the portal veins which had ceased both to suck up chylus, and send out nourishment to the stomach and intestines, because the secrets of both the lacteal and lymphatic absorbents were very extensively developed. The liver, therefore, which had been the "shop and author of the blood," and root of all the veins, the very principium et fons of the natural faculties, the "long-lauded liver" must now cease from its high functions, and assume its proper rank in the animal œconomy. It was therefore regularly deposed, put to death, and buried by its opponent Bartholin in his Chap. 8th, which has the following quaint caption; "Post inventa vasa Lymphatica, Hepatis exsequiæ."*

This funeral sermon, as it may be called, is so good a jeu d'esprit, and withal gives so fair a summary of the revolution in physiology, that I am persuaded it will not be unacceptable to those readers who have not seen the original, which is a very rare work in this country.

"It is due," says Bartholin, with great solemnity, "to those important personages who have long sustained the burden of the commonwealth with honour to themselves and advantage to the public, that by remembering and recording their great deeds we should preserve for them that immortality which nature denies.

"This debt of gratitude due to the liver, the chief officer of the human republic, we willingly pay, and it is just that the last honours should be rendered, when ejected and depos-

* The strangest titles were adopted, not only in the medical, but also in the political and religious polemics of that period, the press in England had swarmed with pamphlets under the quaintest titles that can be imagined; the one in the text is sufficiently queer, but not comparable to the Segeri triumphus cordis, post captam de hepatis clade, duce Bartholino victoriam, 4to. Hafn. 1654, or the De Hepatis Exauctorati desperata causa of Bartholin, titles which are not suited to the grave and important results effected by the discussions in these several works.

siologia, lib. II. sect. III. where in pretty round terms, he accuses Bartholin of falsehood, upon a ground too weak to support such a charge. Haller is disposed to give all the praise to Rudbeck, whose Insidiæ Structæ Olai Rudbeckii ductib. Hepat. Aquos. he cites for a letter from VAN HORNE on the subject. I regret very much that this book cannot be had here at present, but I cannot imagine it to be of much force, because the same Van Horne tells a different story to Bartholin himself.* Bartholin, in the last citation, mentions the engravings sent him by Wormius. I shall set down in a note, the verification of this fact, and proceed with my essay.†

Anatomists and physiologists were now on sure ground. They had escaped from the elements, qualities, faculties, and spirits; they knew the circulation of the blood, the proper

* A letter from Johannes Van Horne to Bartholin, dated Leyden, 8th July, 1653, soon after the discovery was published, says, "Pertulet Clariss: Wormius tuas ad me litteras, *tuumque* simul vasorum lymphaticorum *nuperum inventum*. Visum illud jam fuerat meis collegis, qui eccirco me hortati sunt, in illud ut inquirerem. Ergo cum recepissem tractatum avide perlegi, and miratus sum *hactenus* latuisse oculatissimos."—*Barth. Epist. Med.* p. 496. And yet this same man gives a certificate to Rudbeck in support of his claims.

† Wormius, dated at Leyden, 3d Nov. 1653, near four months after Horne's letter. "Scribendi ad tuam claritatem vir celeberrime, occasionem præbuit novum quoddam scriptum, in suecia editum. Quod, quoniam lymphatica *tua* vasa illustranda aliquid ni fallor conferre posse videbatur, & dubitarem an ad vestras ad huc pervenerat manus, quæ heic transcribenda duxi." He then gives a cursory review of the book, and notices the engravings, which he hopes may prove acceptable; says that all the facts have been demonstrated to him and Van Horne by the author himself, who was then at Leyden, and very intimate with him. He does not so much as mention Rudbeck's name, or refer to any claims of priority, which he certainly would have done had he known them, as he was the firm friend of Bartholin.—*Barth. Epist. Med.* p. 505.

Van Horne wrote the letter first cited, in July, 1653—more than twelve months afterwards, i. e. on the 17th of August, 1654, he writes him another epistle. "Quod historiam vasorum lymphaticorum attinet non sum inscius quantum alii sibi in earum primæ inventionis laude arroganda laborent, verum id commune est vitium: *tu tamen primus nobis autor existis*, quanquam fatendum est, D. Rudbekium omnium primo ea mihi demonstrasse"—*Barth. Epist. Med.* p. 562.

uses of the arteries, which no longer carried sanguinem spirituosum, penetrating through the septum cordis, by "holes which are not perforated," they knew the portal veins which had ceased both to suck up chylus, and send out nourishment to the stomach and intestines, because the secrets of both the lacteal and lymphatic absorbents were very extensively developed. The liver, therefore, which had been the "shop and author of the blood," and root of all the veins, the very principium et fons of the natural faculties, the "long-lauded liver" must now cease from its high functions, and assume its proper rank in the animal œconomy. It was therefore regularly deposed, put to death, and buried by its opponent Bartholin in his Chap. 8th, which has the following quaint caption; "Post inventa vasa Lymphatica, Hepatis exsequiæ."*

This funeral sermon, as it may be called, is so good a jeu d'esprit, and withal gives so fair a summary of the revolution in physiology, that I am persuaded it will not be unacceptable to those readers who have not seen the original, which is a very rare work in this country.

"It is due," says Bartholin, with great solemnity, "to those important personages who have long sustained the burden of the commonwealth with honour to themselves and advantage to the public, that by remembering and recording their great deeds we should preserve for them that immortality which nature denies.

"This debt of gratitude due to the liver, the chief officer of the human republic, we willingly pay, and it is just that the last honours should be rendered, when ejected and depos-

* The strangest titles were adopted, not only in the medical, but also in the political and religious polemics of that period, the press in England had swarmed with pamphlets under the quaintest titles that can be imagined; the one in the text is sufficiently queer, but not comparable to the Segeri triumphus cordis, post captam de hepatis clade, duce Bartholino victoriam, 4to. Hafn. 1654, or the De Hepatis Exauctorati desperata causa of Bartholin, titles which are not suited to the grave and important results effected by the discussions in these several works.

ed from his lofty station, he is condemned to a lower rank in life.

"This fate was threatened many years ago by ARISTOTLE, who laid many plots for deposing him, plots which were frustrated by the prudence of Galen and his numerous followers, who have defended and supported him down to our own times, where he seems to threaten ruin by his fall on the heads of those great characters who have aided and abetted him so long.

"By the discovery of lacteals going to the axillary veins in the thorax, Pecquet deposed the unfortunate liver from his office of sanguification, because, forsooth, he could find no lacteals attached to his service, and plenty of associates and accomplices were found for this conspiracy against the long-lauded liver.

"As for me, I never desired on slight grounds to tumble the veteran from his high seat, but for his age sake, made many efforts to save him. I divided the empire of sanguification between him and the heart, for I had seen lacteals going to him as well as to the heart, and it is not to be denied, that some small vessels do go to, or come out from him, as has been often seen by accurate dissectors. They could be demonstrated, and it was wonderful that any of his numerous opponents should call them in question: if not lacteals, what were they? why not assign them another office and use? If, therefore, we have always observed such vessels about the liver, and mistook them for lacteals, we did justice by distributing the chyle partly to the liver and partly to the heart, until nature taught us otherwise. But now, that we have been lately permitted at Copenhagen to see with our own eyes, (first,) the origin, course, and office, of these vessels, while diligently investigating nature in living dissections, we have thought proper no longer to adhere obstinately to antiquated notions, or follow the declining fortunes of the forsaken liver: for we have seen these vessels about the liver are peculiar, sui generis, and have, on account of the fluid they contain, named them lymphatic vessels. We have seen, that they carry water from the liver to the receptaculum chyli, that when tied up they swell towards the liver, and are empty

above the ligature, and that they are similar in substance, colour, and contents, to those which elsewhere we first showed coming from the lower belly and limbs.

"By this new invention, the liver, so applauded for so many ages, lost all hope of retaining the office of sanguification, and almost the hope of any safety. Grieved at this change of fortune, in a viscus so celebrated, I told him of the frailty of all sublunary things, and the slippery tricks of changeful fortune; advised him to be of good cheer—that like the greatest heroes his fortunes were reversed—that there are times of waxing and of waning, of being born and of dying—that all which is born must sometime die—I spoke of the immutable law of our mutability—that even empires must decline, and the decrements of republics are fore-ordained.

"Enough for its praise, that by the suffrages of the good and the negligence of the many, it had either merited or enjoyed a reign over us of so many generations, I recommended if it should be deposed from its proper office, the secretion of bile, it should not vent its choler at me as the author of ruin to its subverted empire and overthrown principality; but at the stars, at nature and the Pecquetians, who had causelessly stirred up such seditions: in the meantime, mindful of its reverence, and unwilling that the long-reigning governor of our abdomens should be carried to the tomb without one memorial of its happy and successful administration of sixteen hundred years, I prepared the following Epitaph.

Siste Viator,
Clauditur hoc Tumulo, Qui
Tumulavit Plurimos.
Princeps Corporis Tui Cocus
Et Arbiter;
Jecur Notum Seculis,
Sed
Ignotum Naturæ.
Quod
Nominis Majestatem, et
Dignitatis,

Fama Firmavit,
Opinione Conservavit;
Tamdiu Coxit,
Donec Cum Cruento Imperio
Seipsum
Decoxerit.
Abi Sine Jecore Viator
Bilemq. Hepati Concede
Ut Sine Bile Bene
Tibi Coquas. Illi preceris."*

This epitaph is also found in a note in Sprengel's Histoire de la Medicine, tom. iv. p. 220, and Sprengel allows that it is spirited.† As my object has been merely to notice some of the circumstances which accompanied the discovery of the absorbent system, I shall not detain the reader with a particular account of the limits to which each anatomist reached in the investigation of the new order of vessels. Wharton, Glisson, Nuck, and Ruysch, removed still further and further the bounds of anatomical knowledge on these interesting and important portions of our frame. I need not mention Mascagni, at a later period, with whose fine injections most of the readers of this journal are acquainted, through the specimens in the late Dr. Wistar's collection; but even in our own day there are many desiderata in the anatomy and physiology of these vessels. The late experiments of Magendie in France, and of our respectable countrymen, Drs. Coates and Lawrance, in Philadelphia, are particularly interesting, when compared with the ancient theory of venous absorption; and if the liver once was cast down from its high rank in the councils of the old pathologists, by the "Pecquetians," we need only mention the names of Johnson, Armstrong, and Abernethy, to show that its "asseclæ" are not few nor faint

* Vid. Manget. Biblioth. tom. II. 729, where Hepar stands in the 7th line, instead of Jecur, which must have been intended by Bartholin.

† "En memè temps il publia contre Riolan une diatribe virulente, ou il rabaissait beaucoup la dignetè du foie et faisait à cette organe une epitaphe qui n'est pas sans esprit."

in our own times. My object has been to show, that the doctrines overthrown by Harvey's and Asellius' publications, and those arising out of them, are almost, if not wholly, Hippocratic and Galenical, and consequently that the doctrines of PARACELSUS and VAN HELMONT had not exercised such a vast influence as has been pretended. The limits of a journal will not permit a full examination of the interesting history of these revolutions, which would fill a volume, and an interesting volume too, in the hands of a D'ISRAELI.

ART. VI. *On the production of Animal Heat. Read before the Philadelphia Medical Society.* By HENRY BOND, M. D.

THERE is no object in the material world, which has so much occupied, interested, and perplexed philosophers, as caloric. We can hardly move a step in any department of physical science without finding ourselves obliged to take its influence into consideration. Its agency is so universal, and its phenomena are so interesting, that it is not surprising that some nations, who have not been blessed with the light of Divine Revelation, should honour with deification that incomprehensible something, which they observed to possess such supreme power of terror and benignity. HIPPOCRATES, than whom no one ever examined the operations of nature more closely, says, "*quod calidum vocamus, id mihi et immortale esse videtur, et cuncta intelligere, et videre, et audire, et scire omnia, tum præsentia tum futura.*"* Notwithstanding the interest and importance, which the ancients attached to fire, the first of the four elements, under which they classed all known objects, very little was known of it until a recent date, and perhaps nothing which a philosopher of the present day would admit to be sound doctrine.

* That which we call fire appears to me to be immortal, sees, hears, and knows all things both present and future.

For nearly every thing which we now know of caloric we are indebted to chemistry; and so recent and rapid has been the rise and progress of this science, that we are almost wholly indebted to our cotemporaries for its present acknowledged doctrines. But with respect to the essential nature of caloric—whether it be a separate entity, or only a quality or attribute of matter—there seems to be as much uncertainty in the minds of philosophers as at any former period. A great part of chemists within the last hundred years have been of the former opinion; while on the other side are found several names, which are individually in themselves a host; beginning with the great Lord Bacon, including Sir Isaac Newton, and terminating with Sir H. Davy. The hypotheses which have prevailed within the last fifty years, to account for the production of animal heat, appear to be founded on the supposition, that caloric is a separate entity—that it is a subtle, highly elastic, penetrating fluid matter, of inappreciable tenuity, diffused throughout the universe—that its particles are endowed with indefinite idio-repulsive powers, and, as some suppose, with a strong attraction for other bodies. To this repellency and attraction in its particles was attributed that constant tendency to an equilibrium of temperature, which exists among contiguous or neighbouring bodies.

But it was observed, that in living beings, especially in animals, this equilibrium never occurred, notwithstanding there was a perpetual tendency to it. This fact is so palpable, that it must have been noticed from the earliest ages. It did not require a philosopher to see that the living animal is endowed with the power of generating heat. But the *quo modo* was not so obvious. Almost every physiologist has tried his ingenuity upon its solution. Galen supposed, that heat was generated in the heart; which organ he compared to a bellows, which blew or expired warm air—and that this heated air was conveyed by the arteries to different parts of the body to maintain its temperature. This hypothesis has been happily imitated in the present mode of warming some of our churches, banks, &c. by currents of heated air; but so

far as I know, without giving Galen credit for suggesting the idea.

Boerhaave, in his attempt to explain every phenomenon in the living animal on the principles of mechanical philosophy, supposed that animal heat was produced by the friction of the blood against the sides of the vessels. This supposition gives us an unfavourable opinion of his philosophy, or rather it shows how a man's philosophy may be warped by preconceived theories; for if fluids produce heat by friction, what must be the temperature of the bow of a ship, or that of a lea-shore in a gale?

Within the last half century, and since the rise and prevalence of pneumatic chemistry, there have been several well known hypotheses to account for the production of animal heat. The *two first* which I shall notice are those of Dr. Black and Dr. Crawford, which were both founded on the same basis, viz. the conversion of oxygen gas into carbonic acid in the lungs.

Dr. Black made what were for a long time regarded some of the most brilliant discoveries in chemistry. These constituted the basis of his theory, of latent heat, and of what has sometimes been called the French theory of combustion. This theory was founded upon the absorption of the base of oxygen gas by a combustible body; and combustion therefore was only the play of affinity between the basis of oxygen gas, caloric, and a combustible body. Whenever oxygen gas, which possessed a great capacity for caloric, changed its form, entering into either a fluid or solid combination, its caloric, which had been combined in a latent state, became free or sensible. Dr. Black observed, that in respiration a considerable part of the oxygen disappeared, or was not expired, and that in place of it there was expired a gaseous body, which was known to be a product of combustion, and which was just equal in quantity to require for its production the oxygen which had disappeared. The inference seemed very fair, that the oxygen had combined with carbon in the lungs; and as this combination took place suddenly, it seemed fair to infer that caloric was then disengaged as well as

when it took place out of the lungs. Thus the lungs were viewed as a kind of furnace, in which heat was generated and communicated to the blood in its passage through the lungs, and by this fluid distributed throughout the system.

The chief objection to this hypothesis for a long time was, that it was insufficient to account for the uniformity of temperature throughout the system—that the heat must accumulate to excess in the lungs, and be deficient in remote parts of the system. The results, however, of some experiments of Dr. John Davy, which I shall notice more particularly hereafter, are thought to weaken very much the force of this objection; and to be so favourable to Dr. Black's theory, that, notwithstanding Mr. Brodie's well-known experiments had been for years before the public, Dr. Davy said he had "no hesitation in selecting Dr. Black's theory, which appeared to him most simple and satisfactory."

This theory was followed by that of Dr. Crawford—a theory so beautiful and ingenious, that we almost regret to learn that it was not constructed of materials to ensure its perpetuity. He professed to form his theory from an extensive series of experiments. He, as well as Dr. Black, attributed the production of heat to the conversion of oxygen gas into carbonic acid in the lungs. But to account for the equability of the temperature throughout the system, he supposed that the blood acquires so much greater capacity for caloric in changing from venous to arterial in the lungs, as to require all the caloric disengaged from the oxygen to maintain its temperature; and that when the arterial blood reaches the capillary vessels, it there is converted into venous blood, thereby losing its capacity for caloric, and liberating that caloric, which had been derived from the decomposition of oxygen gas, and returning to the heart at nearly the same temperature at which it left it. But, although this hypothesis of Dr. Crawford claimed to be construed according to the best rules of philosophizing, viz. by careful inductions from well established facts, there never was one more completely demolished. Within the last fifteen years, the experimental investigations in chemistry and physiology have

overthrown almost every fact and principle, which supported either of these hypotheses, especially that of Dr. Crawford.

In the first place, admitting Dr. Black's theory of latent heat, and the French hypothesis of combustion to be true, they would be insufficient, according to what is now known of the gases, to account for the production of animal heat. It was for a long time believed, that oxygen gas possessed a capacity for caloric, compared with that of atmospheric air and carbonic acid, nearly as *three* to *one;* and consequently, that when the base of oxygen gas combines with carbon to form carbonic acid, only one-third of the caloric of the oxygen is required, in order to maintain the carbonic acid at the temperature which belonged to the oxygen, previous to the combination; thus leaving most of the other two-thirds to be distributed by the blood through the system, and thereby sustaining the animal temperature. But it is now thought by chemists to be satisfactorily demonstrated, that oxygen has a less capacity, for heat than either air or carbonic acid. If this be a fact, then according to the theory of Black and LAVOISIER, the combination of oxygen with the carbon of the blood would produce cold instead of heat; and those, who still hold to the doctrine of latent heat, may think this opinion confirmed by the fact, that an animal cools considerably faster, when the circulation is kept up by artificial respiration, than where the respiration and circulation are allowed to cease soon after death. Some facts have been long known, which appeared absolutely irreconcileable to the doctrine of latent heat, and the theory of combustion founded thereon. This theory was never able to give even a plausible *rationale* of the explosion of gunpowder, nor of the well-known experiment of Count RUMFORD for the production of heat by friction. The few facts of this kind were viewed as exceptions to the doctrine—and there appeared to be much more probability, that further investigations would reconcile these few facts to the general doctrine of combustion, than that they would multiply so as to overturn it. But the mass of facts of the same character accumulated by Sir H. Davy, is considered to have completely destroyed Dr. Black's theory.

Neither Dr. Black nor Dr. Crawford, to my knowledge, supposed that the nervous power had any agency in the production of animal heat, except so far as it was concerned in distributing it by means of the circulatory apparatus. I believe, however, there were some, even during the greatest prevalence of their hypotheses, who were unwilling to entrust the performance of this function entirely to the laws of inorganic matter. There was a time, when nearly all the functions of the living animal were accounted for on mechanical and chemical principles. But the doctrines of chemical physiology have long been exploded; and as it was found, that the action of chemical affinity was incapable of performing, or accounting for, any other vital phenomenon, it was fair to infer the improbability of an exception in regard to the production of animal heat.

Some, however, were so attached to the doctrine of latent heat, that after it was demonstrated, that animal heat was not produced by chemical combinations in the lungs, another theory was advanced to account for it on the principle of latent heat; viz. that it is produced in every part of the system, where nutrition and secretion are going on, by the conversion of aerial and fluid ingesta into solids, and evolving caloric on the well-known principle, that bodies in passing from a rarer to a denser form always evolve caloric; and that this process is going on so constantly and rapidly as to suffice to keep up the temperature of the animal. But let it be recollected how nearly the decomposition corresponds with the recomposition, and how little that difference can be in favour of the latter, even when growth is most rapid—that during a large part of life these actions advance equally, or alternately exceed each other; and let it be particularly noticed, that there is often preternatural heat in those diseases where emaciation is going on most rapidly. If this theory were true, it would overthrow the present distinction of animals into warm and cold-blooded; for in some of the latter the nutrition must be more rapid than in a great portion of the former. If this cause be sufficient to maintain the temperature of warm-blooded animals at 100° or even 130° above that of the surrounding medium,

what ought to be the temperature of vegetables of rapid growth? Gourds, melons, cucumbers, &c. ought to maintain a temperature much further above that of the surrounding medium, than animals. Allowing the doctrine of latent heat to be correct, all the heat generated in a life-time, according to this theory, would not warm a Canadian hunter or wood-cutter one winter's day.

These remarks, I trust, sufficiently show the futility of the theory. It must, however, be conceded, that in one respect it approached nearer the truth, than perhaps any, which had preceded it, for it supposed that animal heat was generated in every part of the system, instead of being produced in one organ to be distributed over it by the blood.

This mode of accounting for the production of animal heat, constitutes an essential part of the theories of Richerand and Magendie.

Richerand attributes its production to three sources.

First. *To the combination of oxygen gas with the blood in the lungs, and evolving its caloric when it passes from an aeriform to a fluid state.* But even if the oxygen does combine with the blood in the lungs, and if the oxygen thus combined leaves its caloric to be distributed through the system, where is the caloric obtained, which gives to the carbonic acid, which is generated in the lungs, its gaseous form? The remarks already made upon Dr. Black's theory, are applicable to this part of Richerand's.

His second source of heat is in several organs, in which fluid or gaseous substances change their form from aeriform to fluid, or from fluid to solid, and evolve their caloric. This, he says, takes place in the digestion of particular kinds of food, and the skin decomposes the atmosphere, and deprives it of its caloric. I admit the fact, that heat is developed in the process of digestion, at least of particular kinds of aliment; but I deny that it is chiefly, if at all, owing to the change of form, which it undergoes. This explanation is contrary to all practice in the treatment of febrile diseases, in which one object is to allay the preternatural heat. According to it we ought to direct the use of the most solid food

cooked in the most solid mode, to febrile patients, because, when swallowed, not being obliged to undergo solidification, no heat would be evolved. On the other hand, all the diluent drinks, in common use in such diseases, should be interdicted. M. Richerand supposes that the air, which is taken into the stomach, is there digested, and that this process constitutes an important source of animal heat. If this be true, our stomachs may be regarded as convenient portable calorimotors, and we have only to gulp down a stomach-full of air in order to warm ourselves at any time. It may be asked, if this explanation of the production of heat in digestion be correct, why should a few grains of red pepper or any condiment of that sort make so great a difference in the developement of caloric, whether the food be fluid or solid? It is obvious to every one, that the heat evolved during digestion depends little or none upon the form of the aliment, but upon its stimulating qualities, and its quantity of nutriment. On what facts he founds his opinion, that a portion of animal heat is derived from the decomposition of the air by the skin, I know not. It will be time enough to examine this opinion when the grounds of it are presented.

The *third* source, from which he supposes animal heat to be derived, is *the double motion of the molecules in all parts where formation and decomposition are going on.* In this double motion, there is supposed to be a change of form or consistence in the molecules, and that thereby caloric is either absorbed or disengaged; but that the quantity disengaged so much exceeds that absorbed, as to afford to the system a considerable revenue of heat. This opinion I have already examined, (p. 312,) and I trust, shown its futility.

Magendie attributes animal heat to *two sources,* which rest, as well as Richerand's, entirely on Dr. Black's doctrine of latent heat. He says the *principal or most evident source* appears to be respiration—and the developement of heat in this process is owing to the formation of carbonic acid. Experience has demonstrated to us, as he thinks, that the blood is heated about one degree in passing through the lungs. Whether he takes this fact on the authority of Dr. Davy's

experiments I know not. If, however, it be a fact, it must be accounted for in some way besides the formation of carbonic acid in the lungs. To my mind, the experiments of Berard and Delaroche upon the gases; and those of Brodie and Philip upon the connection between respiration and circulation and the production of animal heat; and upon the dependence of animal heat upon the nervous influence, are so satisfactory, and approach so near to a demonstration, that I regard few facts better established in physiology than this, that *no heat is generated in the lungs in the production of carbonic acid.*

But as the temperature of the extremities is sometimes, and perhaps usually, higher than could be accounted for on the supposition, that the lungs are the only source of heat, Magendie assigned it another, which he calls the *second source* of animal heat. He refers the production of all the heat, except what is produced in the lungs, to nutrition and secretion. As almost every chemical combination occasions an elevation of temperature; and as he cannot doubt but such combinations are going on in nutrition and secretion; it is very natural to suppose that heat is developed in those processes. He does not regard the heat produced as itself a secretion, but only as a result of the change of form of the molecules, whereby they have a less capacity for caloric; and thus he accounts for the production of animal heat in this instance on the doctrine of latent heat.

The objections to M. Magendie's second source of animal heat have been already advanced at some length; and now I would only ask, if this explanation be correct, how shall we account for the difference between warm and cold-blooded animals? Why should a mouse be warmer than a tortoise?

I have already referred to a paper published by Dr. John Davy, in 1814, containing "an account of some experiments on animal heat." These are sometimes referred to as respectable authority, and it is therefore proper to devote some attention to them, although I attach to them no great importance. His *first* object was to ascertain "the relative capacities of venous and arterial blood for heat."

The conclusion from his experiments was, "that there is no material difference between venous and arterial blood in respect to specific caloric, except what arises from difference in specific gravity," which was very small.

His *second* object was to ascertain the relative temperatures of venous and arterial blood. His conclusion was, "that the temperature of arterial blood is higher than that of venous; and the temperature of the left side of the heart higher than that of the right," and that this difference is usually about one degree, and sometime one and a half.

His *third* object was to ascertain "the temperatures of different parts of the animal body." His conclusion was, "that the temperatures of parts diminishes as the distance of the parts from the heart increases."

These experiments seem to have been instituted on purpose to test Dr. Crawford's theory, which was already completely overthrown—for the "three circumstances to which his attention was directed, constituted the essential and peculiar points of that theory; and his results are in direct opposition to each of them—just such as a man would wish to arrive at who wished to overthrow the theory. And they evidently support, (as he observes,) the two main points of Dr. Black's theory, viz. that animal heat is generated in the lungs, and that it is distributed over the whole system by means of the arterial blood. Notwithstanding these experiments of Dr. Davy were instituted some time after the publication of Mr. Brodie's two interesting papers, to which I shall presently call your attention, and he had the advantage of hints from his brother Sir Humphry, I attach very little value to them.

His mode of ascertaining the relative capacities of the two kinds of blood seems to me very unsatisfactory. He drew them both into vessels, and then, by beating or stirring them with wooden rods, deprived them of their fibrin—then by heating them to unnatural temperatures, or by mixing them with hot or cold water, and watching their rate of cooling, he arrived at his conclusion with respect to their relative capacities for caloric. To judge of the powers or principles of living blood in the

living system, by such experimenting, is to me about as satisfactory as it would be to examine those of an egg physiologically, by depriving it of one of its parts, then beating or stirring it, and after mixing it with sundry savoury ingredients, finally baking or boiling it into a custard or pudding.

Nor are his experiments on the relative temperature of the two kinds of blood, and of the two sides of the heart, more satisfactory. In his experiments on oxen, the animals were knocked down, and of course respiration ceased; and before he tried the temperature of the blood, it had become of the same colour in the carotids and jugulars. Thus we see, that as the respiration ceased, the venous blood ceased to be arterialized in its passage through the lungs, and both arteries and veins carried venous blood; and of course in these experiments he was not trying the relative temperature of venous and arterial blood, but the temperature of one kind of blood flowing in different vessels.

But in another part of his paper he says, "he found the stomach of the ox, (in the pyloric compartment,) of a higher temperature than the left ventricle itself: thus, when the latter *immediately after death* was 103°, the stomach was 104,5°—that is, he found the temperature of the stomach immediately after death 1,5° higher than he ever found that of either the left ventricle or arterial blood.

But it may be said, that in his numerous experiments on sheep and lambs, he obtained pretty uniform results. He always found the temperature of arterial blood 1° to 1,5° above that of venous blood. It appears that his experiments on sheep and lambs were performed on the living animal. Now it is known that fear, and sometimes pain, have a remarkable effect on the animal temperature. The blood recedes from the surface and extremities, chilliness follows, and it may amount to a real ague fit.

In Dr. Davy's experiments on timid sheep and lambs, the venous blood was returning from the extreme vessels, which would first manifest the effects of the chill from fright and pain; while the arterial blood, which he examined, came from the centre of the system, where it is well known that

changes of temperature take place much more slowly, and where its variations are never very extensive. If this explanation possess any validity, it will enable us to explain the difficulty, which Dr. Davy could not get over. He says, "I cannot well explain the difference which exists between results of the preceding experiments, (on sheep and lambs,) and those of Messrs. COLEMAN and COOPER, *which are directly opposite.*" I have not seen the account of the experiments of these gentlemen, but from what Dr. Davy says, I suppose the animals were killed and probably strangled before they tried the temperature of the blood, or of the cavities of the heart. Dr. Davy says he has himself "observed in many instances, when the right ventricle was found distended with blood, little difference of temperature between the two sides of the heart." But how should this take place, if the venous blood which distended it, were of a lower temperature than the arterial, which was in the left ventricle? How mere distension in the dead animal can elevate the temperature of a cavity or its contents above its own ordinary temperature, the Doctor has not informed us, nor can I conceive.

It seems to me probable that when the vital actions are well balanced throughout the system, the blood will be found of about the same temperature in the arteries and veins, and in both sides of the heart; that when there is diminished action in the capillaries, especially in the extremities and superficies, the venous blood will have a lower temperature than the arterial; and that when there is great excitement in the capillaries of any part, the temperature of the venous blood returning from that part will be higher than that of the arterial blood.

Dr. Davy's third conclusion from his experiments implies, that the heart is the fountain of heat. But his own fact with respect to the temperature of the stomach of the ox, is a fact not easily reconciled to that conclusion. In some local diseases, the temperature of the affected part is several degrees above that of the blood taken from the left auricle.

I shall next notice the experiments of Mr. Brodie, con-

tained in a paper published in the Philosophical Transactions, in 1810, and which are thought to have given the death blow to the opinion, that animal heat is produced by the change of venous blood into arterial.

When a rabbit was pithed, that is, when the spinal marrow was divided close to the head, the respiration stopped immediately, but the heart continued to circulate *dark blood* ten or fifteen minutes.

When the head was removed, and the vessels secured, the heart continued to circulate dark blood the same length of time. But when artificial respiration was employed in an animal pithed or beheaded, the heart continued to act with nearly its usual frequency, and the blood presented the same changes and appearances as in the natural state—it was changed from venous to arterial in the lungs, and from arterial to venous in the capillaries. But he uniformly found in all such experiments where artificial respiration was employed, that the animal cooled faster than when the respiration and circulation are allowed to stop after being pithed or beheaded. In a dog upon which he employed artificial respiration, the pulse at the end of two hours fell from seventy-six to seventy —in the course of the next half hour the pulse sunk to thirty-five, and the experiment ended. During those two hours the thermometer in the rectum fell from one hundred to eighty-six, and at the end of the experiment was seventy-eight. It should be noticed that he uniformly found, when he opened an animal at the termination of an experiment, wherein artificial respiration was employed, that the temperature of the heart and pericardium was two or three degrees below that among the viscera of the abdomen. Neither was any urine secreted. His experiments were performed on dogs and rabbits, and his results presented no essential variation except what arose from a difference in the size of the animals. His mode of performing and reporting experiments, I regard as one of the finest specimens of that kind of performance. None of his facts, as far as I know, have been called into doubt by subsequent experiments. From these experiments he deduced the following conclusions—

1st. "The influence of the brain is not directly necessary to the action of the heart.

2d. "When the brain is injured or removed, the action of the heart ceases, only because respiration is under the influence of the brain, and if under these circumstances respiration is artificially produced, the circulation will continue.

3d. "When the influence of the brain is cut off, the secretion of urine appears to cease, and no heat is generated; notwithstanding the functions of respiration and the circulation of the blood continue to be performed, and the usual changes in the appearance of the blood are produced in the lungs.

4th. "Where the air respired is colder than the natural temperature of the animal, the effect of respiration is not to generate, but to diminish animal heat."

In 1812, Mr. Brodie published another paper, detailing additional experiments, the chief object of which was to ascertain whether the air in artificial respiration undergoes the same changes as in natural respiration. His experiments were performed on rabbits; and he found that a rabbit, in a natural state, consumes from 50.60 to 56.44 cubic inches of oxygen gas in an hour. In his first trial with artificial respiration, the rabbit consumed only at the rate of 40.48 cubic inches of oxygen in an hour; but in all his subsequent experiments the rabbits consumed at the rate of 51.10 to 56.55 cubic inches in an hour. The variations in the quantity of oxygen consumed, both in natural and artificial respiration, appeared to depend upon the size of the animals. He took them in pairs, as nearly as possible of the same age and size, for an experiment of each kind. But even when this circumstance is known, the coincidence between the *maximum* and *minimum* quantities consumed in each mode of respiration, is remarkable. The difference between the maximum quantities was less than $\frac{1}{100}$, or as 564 to 565. In these experiments, as well as in those detailed in his first paper, wherein artificial respiration was employed, the blood underwent all the apparent changes which are observed in the natural state, and the same chemical combinations took place in

the lungs; but yet the animal cooled faster than when respiration and circulation were allowed to stop immediately after being deprived of its nervous influence. This fact, I think, is satisfactorily accounted for in the following manner. The temperature of the medium, in which the animals were placed during these experiments, was from 30° to 40° below their natural temperature. As soon as an animal is deprived of its nervous power, it has lost the power of generating heat, and its temperature is governed by the same law, as inanimate matter. There is a constant tendency to an equilibrium of temperature between the carcass and the surrounding bodies, and that carcass will soonest arrive at this equilibrium; that is, will cool fastest, which is placed in circumstances most favourable to part with its caloric. Where artificial respiration is employed, the blood being reduced to capillary streams in passing through the lungs, is brought as completely within the refrigerating influence of the cool air, as if it were in absolute contact, and it must of course be deprived of a portion of its caloric. This explanation is corroborated by the fact, that, at the termination of an experiment of this kind, the temperature of the thorax was always found considerably lower than some other parts of the system.

I know of nothing that tends more conclusively to prove, that the production of animal heat is dependent on the nervous influence, than some facts stated in this same paper of Mr. Brodie. They are the more satisfactory, because they were not derived from maiming, destructive or very excruciating operations.

He says, "in an animal, which is under the influence of a poison, that operates by disturbing the functions of the brain, in proportion as the sensibility becomes impaired, so is the power of generating heat impaired also.

"If an animal is apparently dead from a poison of this description, and the circulation of the blood is afterwards maintained by means of artificial respiration, the generation of heat is found to be as completely destroyed, as if the head had been actually removed.

"Under these circumstances, if artificial respiration is kept up until the effects of the poison cease, as the animal recovers his sensibility, so does he recover the power of generating heat; but it is not till the nervous energy is completely restored, that heat is produced in sufficient quantity to counteract the cold of the surrounding atmosphere."

Dr. Wilson Philip, in the course of his extensive physiological investigations, performed numerous experiments, which must be viewed of very considerable importance in reference to the subject now before us. In the first place, it may be observed, that his experiments and those of Mr. Brodie mutually corroborate each other; and he has clearly shown, that secerning surfaces of organs will not secrete, when deprived of their nervous influence, notwithstanding they sustain no organic lesion, and receive their usual supply of arterial blood.

He also found, that when a secreting surface is deprived of its nervous influence, and consequently does not secrete, if galvanism be applied to it through the same channel, by which it receives its nervous influence, the function of the part will be performed in the same manner as if its nervous influence had been restored.

He also found that when a part is deprived of its nervous influence, so as to interrupt or diminish the secretions proper to it, the power of maintaining its natural temperature is interrupted or diminished in a corresponding degree.

Dr. Philip says, "The various phenomena of animal temperature, and the experiments on this subject, seem to me to prove, that the caloric, which supports animal temperature, is evolved by the same means, (namely, the action of the nervous influence on the blood,) by which the formation of the secreted fluids is effected, and *consequently that it is to be regarded as a* SECRETION." If this view of the subject be correct, and galvanism be capable of performing the functions of the nervous influence, it ought to occasion an evolution of caloric, (as it effects the formation of secreted fluids,) from arterial blood, after the nervous influence is withdrawn. To ascertain this point, (whether galvanism will occasion an evo-

lution of caloric from blood after the nervous influence is withdrawn,) he performed several experiments. The inferences from his experiments were—

"That the galvanic influence occasions an evolution of caloric from arterial blood, if it be subjected to this influence as soon as it leaves the vessels.

"That the galvanic influence occasions no evolution of caloric from venous blood, although subjected to it as soon as the blood leaves the vessels.

"That, if caloric be admitted to be a substance, its evolution from the blood being effected by the same means, by which the secreted fluids are formed, *it must be regarded as a secretion.*"

I have already devoted so much time to the discussion of exploded and unsound physiology, that I have little left to state my own belief; or rather what seems to me probable. I say what seems probable, for he, who has watched the revolutions in chemical and physiological science even within our own day; who has seen theories and reputed facts, which their authors thought as well established as the doctrines of gravitation, vanishing, and leaving nothing but the words they were made of, will be cautious how he yields his entire credence to any hypothesis in chemistry or physiology, as being fixed on an immovable basis.

Whether animal heat be a *secretion* or not, is a question which it is very difficult, if not impossible, to decide. The first step towards it is to decide another question already mentioned, whether caloric be a substance, a separate entity, or only a quality or affection of matter. It has been already stated, that almost all physiological reasoning is founded on the former supposition. But those who are familiar with the writings of Sir H. Davy, know that there are some facts, which are very difficult, if not impossible to be explained upon that supposition; and these facts possess so much importance in his view, that he, as well as Count Rumford, adopts the same doctrine of heat, as to its nature or essence, as was advanced by Bacon, the prince of philosophers, more than two hundred years ago. Lord Bacon says, "heat is

motion, but it is not to be understood that heat generates motion, or that motion generates heat; but that heat itself, or the very existence of heat *is motion* and nothing else." Sir Humphry Davy says, "the immediate cause of the phenomena of heat is motion."

If this hypothesis be true, heat must be regarded as an *affection or quality* of the animal, and not a secretion. I am inclined to the opinion, that caloric will be ultimately proved to be a substance; and that then animal heat *may* be proved to be a secretion. I may, with great justice, be told that on such questions, one fact or good reason is worth a thousand opinions. But these questions are so mazy that I shall walk round them, giving full permission to those who think themselves possessed of sagacity sufficiently acute, and ingenuity sufficiently powerful, to make their way through them.

But with respect to the *source* of animal heat—how and where it is produced, there is not so much doubt in my mind. We may ascertain this point with some satisfaction without determining precisely the essential nature of what is produced. I suppose then that *the production of animal heat depends entirely upon the action of the nervous influence upon arterial blood;* or perhaps more correctly, *their reciprocal action upon each other.*

It requires the integrity of the nervous system, and of the respiratory and circulatory apparatus. I have already adverted to experiments on animals, which show, that when a part of the body is deprived of the whole, or a part of its nervous influence, it loses at the same time the whole or a part of its power of generating heat. The conclusion from these experiments is amply confirmed by observations on the alterations of the natural functions produced by accident or disease. It is always found that paralytic limbs are colder than any other part of the body, although, as far as can be learned from the pulse, they receive their usual supply of arterial blood of the same temperature, at which it is sent to other parts. When a person falls asleep with his arm in such a position as to compress its nerves, and awakes after a considerable time

with his arm in that palsied state, which is commonly described as *being asleep*, the hand will be found colder than natural.

The dependence of the evolution of heat upon nervous influence is perhaps nowhere more strikingly illustrated than in the passions and emotions of the mind. In such as are denominated *the depressing*, in fear for instance, there is paleness and coldness of the skin, trembling, and the person exclaims, "what art thou that makest my hair to stand, and my *blood to run cold!*" When fear is long-continued, it produces a chronic torpor of the system, and extinguishes life slowly by what is called a broken heart. On the other hand, in those which are called the exciting passions—in anger, for instance, there is an extraordinary evolution of heat. Hence the angry man's eye is fiery, his countenance flaming, and his blood boils.

In Mr. Henry Earle's paper on *animal heat*, there are detailed some very interesting facts and cases. At the conclusion of the case of Thomas Anderson, in whom the axillary plexus was lacerated or crushed in a fall from a great height, he says, "On reviewing the circumstances of this case, it appears that a limb deprived of its due nervous influence is of a much lower temperature than natural, notwithstanding there is no apparent diminution in the circulation of the blood—and that a limb so circumstanced is incapable of supporting any fixed temperature, and is particularly liable to partake of the heat of surrounding bodies."

It is equally clear on the other hand, that when the whole body, or a part of it, in every other respect in a healthy condition, is deprived of its natural supply of arterial blood, it loses in a corresponding degree its power of generating heat. Hence in asthma, where there is an imperfect decarbonization of the blood, "the habit of the patient is generally cold." Dr. Bree says, "If the bulb of a thermometer be put into the mouth of an asthmatic, at the approach of a fit, the temperature will be found lower than in the intervals. In the height of the fit," he says, "I have found the heat of the exhaled vapour confined in the cavity of the mouth at 82° F. when

the same subject had the day before proved the temperature by this test to stand at 97°."

In cases of malformation of the heart—in the blue child for instance—and in all cases of difficult transmission of blood, whether from disease in the lungs or sanguiferous system, the patients are subject to great coldness in the extremities and whole body, accompanied with numbness and imperfect sensation.

After large arteries have been tied, as in operations for aneurism, the part which they supplied becomes colder than natural, and so remains, until others are sufficiently dilated to supply it with blood. As soon as the pulse begins to be felt in the principal arteries, the natural temperature begins to be restored.

Thus we see that a supply of arterial blood and of nervous influence are both necessary to the production of heat; and as these appear to be the only things necessary to its production, it must be produced in every part of the body where these concur. And we might therefore calculate *a priori*, that the quantity of heat generated in the whole body or any part of it, would correspond with the vigor and excitement of the nervous and arterial system; and this is the fact. In the *first* place, we find that whenever there is high excitement throughout the body, from whatever cause, whether it be inflammatory fever, highly stimulating passion, violent exercise, or stimulating food and drink—the temperature of the whole body is elevated. Again we find, that the temperatures of the different parts of the body are far from coinciding. They no not, however, as asserted by Dr. Davy, always diminish in proportion to the distance from the heart; neither do the different parts always maintain the same *relative* temperature. We might expect the extremities and superficies, under ordinary circumstances, to be colder than the central parts of the system. In the first place, the extremities, particularly the hands and feet, are chiefly made up of bones, tendons, cartilages, and ligaments, which have a small supply of arteries and nerves, and which consequently have the power of generating very little heat. Of course these parts

depend chiefly upon the integuments for their temperature. In the second place, the extremities present a large surface for the expenditure of heat by perspiration or otherwise. Yet when, by any means, great local excitement is produced in an extremity, as by phlegmonous inflammation or topical stimuli, it acquires a temperature of several degrees above even that of the heart. Again, the cavities of the thorax and abdomen are ordinarily warmer than the extremities or any part of the superficies, not because the decarbonization of the blood takes place in or contiguous to them, but because there is a large mass of viscera situated in them, some of which are largely supplied with nerves and arteries, and which are precluded by their deep situation from any considerable expenditure of heat by perspiration. But notwithstanding this, the temperature of the superficies is, in some diseases, elevated considerably above the ordinary temperature of the heart. Thus in *scarlatina anginosa*, the thermometer applied to the skin rises to 106°, 108°, 110°, and even 112° F.

Caloric is indeed generated in the lungs; not, however, in the decarbonization of the blood, but in the same way as in other parts, viz. by the action of the nervous influence upon the arterial blood carried thither by the *bronchial* arteries. The appropriate function of the lungs I suppose to be as distinct from the *calorific function* of an animal, as the proper function of the heart is from the decarbonization of the blood. It is necessary for the heart to send the blood into the lungs, in order for these organs to perform their function; and it is necessary for the lungs to decarbonize the blood in order that the nervous influence may evolve caloric. But the lungs no more evolve the caloric, than the heart decarbonizes the blood. In like manner as in the lungs, I suppose, heat is generated in the heart and stomach, for both are largely supplied with blood vessels and nerves. This is peculiarly the case with the stomach, and this enables us to account for the fact observed by Dr. Davy, that he found the stomach immediately after death, warmer than the heart or any other part of the system.

Although animal heat is not evolved by the decarboniza-

tion of blood in the lungs, yet respiration seems chiefly designed to subserve the calorific function; for it may be observed, that the temperature of animals is proportioned to the extent or perfection of their respiratory organs; and that in cold-blooded animals, in which respiration is very limited, and may be intermitted for a considerable time, without inconvenience, every function except that of generating heat, is performed as perfectly, perhaps, as in the warm-blooded; especially *nutrition* and *secretion*, to which Magendie attributes all the heat, which is not generated in the lungs.

I omit for the present any speculations upon the nature of the action or influence, which the nervous power and arterial blood exert upon each other; upon the probable identity of the nervous power and the galvanic fluid; and upon the manner in which decarbonization of the blood subserves the calorific function.

ART. VII. *On Periodicity* in the Actions of the Animal Œconomy during Health and Disease.* By JOHN BELL, M. D.

FEW subjects in medicine admit of a wider range of inquiry, or a more important application to the preservation of health and cure of disease, than the alternate acceleration and retardation of functional movements in the human frame. Our bodies in this respect but participate in the general laws governing the creation, which prescribe that action shall be followed by repose, seasons succeed each other in uniform order, the sleep of winter precede the glad waking and joyous movements of spring, and the splendour, animation, and bus-

* The critical philologist may perhaps object to this word as being too Gallic, though its construction follows as naturally from the adjective *periodic* as eccentricity, causticity, lubricity, &c. from eccentric, caustic, lubric, &c.

tle of the day give place to the darkness and tranquillity of the night. All the phenomena that take place on and around the planet which we inhabit, partake of the periodical changes resulting from its daily rotation on its own axis, and its annual revolution round the sun, together with the play of attractions between it and its satellite, the moon. Magnetism, electricity, atmospherical temperature and pressure, the aerial currents, and the rise and fall of the waters of the ocean, are all subordinate to these grand and never-ceasing movements.

It has been recently ascertained, (by Mr. HANSTEIN, of Christiana,) that the intensity of the earth's magnetism is subject to daily variation. It decreases from the early hours of the morning until about eleven o'clock, which is the epoch of its minimum, after which it increases until four o'clock in the afternoon, and during summer, until six or seven in the evening: it again decreases during the night, and returns to its maximum about three o'clock in the morning.

The magnetic needle is, we are informed, subject to a daily vacillation, so that the needle turns towards the west from two o'clock in the morning until eight, and after mid-day retrogrades towards the east. The pendulum also vibrates every six hours from north to south.

The barometer in intertropical regions, has regular diurnal ascents and descents—the mercury rising nearly a line on the sun's approach to the zenith and nadir, or at mid-day and at midnight, and descending as the sun deviates from these points, or in the morning and evening: it remains stationary at its highest and lowest degree for some hours.*

The electricity of the atmosphere augments gradually from four o'clock in the morning, when it is nearly null, until mid-day, or two o'clock in the afternoon, when it is at its maximum.†

This periodicity thus observable in inanimate matter, is yet stronger in the animated creation; plants, insects, animals, which, impressed by, if not entirely obedient to, the annual revolution of the earth, have their phases and the du-

* *Mosely* on Tropical Diseases. *Tourtelle*, Elemens d'Hygiene.
† De Saussure.

ration of their existence even determined by it. Each season effects marked modifications in their life, such as foliation, efflorescence, moulting, rutting, &c. But first in order are the phenomena connected with the diurnal rotation of the earth.

Linnæus, by a number of ingenious observations, has incontestibly proved the influence of light and darkness on the vegetable kingdom, and still more, he has shown that certain plants observe more regularly the hours of the day, than the presence or absence of light and heat. Thus the cryptogamous tribe, such as the mosses and lichens, like mushrooms, are subterraneous, or shun the too vivid rays of the sun, and hence sprout up and increase chiefly in the night. The liliacæ, and irides, and scitaminæ, which bloom at the beginning of spring, grow and expand in the morning, for the heat of the day makes them droop, and by the evening they are commonly faded. The more hard and ligneous plants, require more heat in the season, and brilliancy in the day, for them to open; and, accordingly, the syngenesiæ, the malvacæ, Indian fig, or *cactus*, do not expand until the sun is well above the horizon; so also the asters, amaranths, and other dry plants, which only flourish after the summer solstice, shine out in all their beauty in the evening.

It is not always, however, by the presence of light and heat alone, that a plant is made to flower and preserve its wakeful state. In the most obscure subterraneous spots, the delicate sensitive plant unfolds its leaves as the sun rises, and closes them when it sets, without the presence of that planet being in any way evidenced to it. It is the same with the other papilionacæ, as the acaciæ and tamarind. Though there are meteoric and tropical flowers, the opening of which depends on the particular state of the atmosphere, in respect to light, heat, or humidity, yet others open at a fixed hour, without being prevented by rain, clouds, or storms. Besides the cestrum diurnum, diffusing its odour through the day, is the cestrum nocturnum, fragrant and wakeful during the night; the mourning geranium, night beauty, nyctago, expand their beauties only of an evening.

What a variety of instructive facts might be revealed by a similar inquiry into the influence of the hours of the day and night on animals. We might pass over the knowledge of the different tribes of insects which swarm and buz in the evening, or the melancholy owl, or the more hideous night hawks, friends of twilight; or the beasts of prey, which brigand like, choose darkness for their excursions, and dwell with more particular interest on the phenomena by which some animals are excited at certain times of the day and night. Thus the domestic cock crows exactly at the dawn, and at fixed hours in the day. Other birds have stated periods for singing, as the evening for the mocking bird, the nightingale and others, and at early morn for the black bird, the larks, &c. Birds are particularly observant of the phases of the day for sleep, watching, singing, eating, desporting themselves; being of all animated creation the most sensible to atmospherical changes, their actions are never without design, and their migrations are equally subject to certain cycles which they readily recognise.

In animals wild and in a state of nature, the hour of copulation is by no means indiscriminately chosen. Reptiles and insects always require the heat of the day, the molluscæ and worms seek one another in the humidity of the morning. Birds rarely copulate in the evening or at night, except the nocturnal species, which choose this time, as do also the shining insects of the night, the glow-worm, fire-fly, &c.

Is man alone insensible to the solar influence, by which all created beings are excited into action at the time and hour determined by their peculiar organization? or has the vital principle within him power paramount to all the agencies by which he is surrounded, and which tend to bring his organs and the solids and fluids that compose them, under physical laws and plays of chemical affinities? This question may be readily replied to, by simply remarking how different we are from ourselves in particular portions of the day and night, whenever we choose to analyse our feelings, either for the purposes of moral philosophy, or when impelled by a certain delicacy of constitution and susceptibility of temper-

ament; not to mention the familiar examples of the habitual alternation of watching and sleep, the regular calls of appetite and expulsion or secretion of what is no longer required for our support.

In the day there is an expansion of vitality, a centrifugal determination: in the night a concentration of power, a centripetal action: two states of the system which are not convertible into each other, nor can they be mutually supplanted by waking through the night and sleeping during the day. A first deduction from this periodicity of the vital functions is, that a perversion of the usual habits, or a deviation from nature, will be unfavourable to health.

Let us now rapidly review the condition and feelings of the animal œconomy during the different periods of the diurnal revolution. When the sun appears above the horizon the healthy man awakes by degrees, and even the blind one feels the approach of day: a new life is announced by extension of the limbs, stretching and slight tonic shocks; the pulse is equable and moderate, there is an indescribable feeling of content, a happy calmness of ideas, and fullness of hope accompanying these movements of the organs or internal functions, and man at this hour, in imitation of his first parent, is inwardly prompted to raise the hymn of praise and thanksgiving to his Maker. As the day advances, our external organs are animated with greater vigour, our senses are more quick, memory more faithful, and ideas more precise. This expansion of existence to the exterior is commonly manifested by those desires which are evidences of strength and of the exuberance of a health which tends to reproduce itself; it is the genial hour, the natural period for the copulation of animals. It is also in the first hours of the morning, or in the second sleep, that spontaneous seminal evacuations take place, and never in the evening or before midnight.

Morning is then the period of youth, of spring, of the reproduction and growth of the body, and of the vigour of external life. Behold those robust peasants awakening at the dawn, their 'sleep was airy light from pure digestion bred:' they preserve their chearfulnesss and activity, the flourishing

air of health and youth; whilst our delicate citizens whom a nocturnal life forces to sleep in the day, are pale, languishing, exhausted, and as it were, aged, because they only live, that is, have their external senses and mind in action, during the evening and night. It has been remarked by Sir JOHN SINCLAIR and other writers on longevity, that the greater number of centenary persons, or those who have attained a very advanced age, were early risers.

If the morning, however, strengthens the external sensitive life, the internal organs, especially in subjects whose functions are not nicely balanced, are more enfeebled at this time. We see in consequence that pains of the stomach or gastrodynia, anorexia, colics, nausea or desire to vomit, particularly in pregnant women; sometimes a bitterness of the mouth and many other morbid phenomena, evince this relative debility of the viscera, or of nutritive life. The evacuation of solid and liquid excrementitious matters more commonly takes place in the morning, and is hence more frequent with those labouring under diarrhœas, diabetes, &c. It is the same with the salivary discharge and expectoration. The natural duration of this matinal period is from three o'clock in the morning until nine, and ought to coincide with the first barometrical tide.

The *second* period is from nine o'clock in the morning until three in the afternoon. It is the acme of the day, the time in which animal life or the external organs and mind, is most excited, and when we may be said to live most abroad. Then are mania, phrenitis, hydrophobia, active hæmorrhages, and all external inflammations more violent and exasperated, especially in the sun's rays, than at any other time. This extreme expansion of vitality, in the most healthy man, renders him also capable of the most exalted thoughts, and of the fiercest passions, during these hours. Genius shines in all its splendour; the sentiments are developed in their full energy during this period, which is the principal one for the occupations of life. The exacerbation of bilious diseases in the middle of the day indicates that the hepatic system and chylopœtic viscera are then particularly agitated. Spirituous

drinks are, in consequence, more hurtful at this time when the mucous tissue of the stomach is in an irritable state. In a hot, burning climate, it is often necessary to withdraw from the extreme excitement of noon, and enjoy a short sleep. Such is the *Siesta* of the Spaniards and other people of southern Europe. 'Tis now

> "———— Amid his subjects safe,
> Slumbers the monarch swain."

Too copious a repast at mid-day will be difficult to digest, on account of the vital power being principally drawn to the circumference.

The *third* period or evening, is comprised between three or four o'clock and nine or ten. The gradual diminution of light and heat, and the setting of the sun are the principal phenomena by which our organization is then influenced. Muscular movements, the affections of the mind, various occupations, the aliments which we have taken, all tend to raise the pulse, which gives ten or twelve beats more in the evening than in the morning.* The animal œconomy is more fatigued, and thence follows the nervous state or enervation, which is the peculiar character of this period, and the first cause of the paroxysms which occur in almost all diseases, especially nervous ones, in the evening.

We feel languid and heavy at this time, the muscular system is sensibly relaxed, our limbs swell, and the ligatures of our clothing seem too tight. The menstrual and hæmorrhoidal flux come on most commonly then, either from the upright position having been so long preserved, or from the general venous plethora at this time. This debility of our organs demands a reparation of their strength, and it would seem to be a time better fitted for repast, as the functions of the internal or nutritive life take the ascendancy. Climate must doubtless produce great differences in the selection of the hours of eating; and the inhabitants of northern

* Schwencke, Hæmatologia, p. 96. Senac, Traité du cœur, tom. II. p. 215.

regions may insist on a preference to be given to the noontide repast—but we shall find on a little inquiry, that the peasantry and labourers of many countries make their principal meal at sunset; and people inhabiting different quarters of the globe, and dissimilar in all other respects in their manners and customs, have agreed in taking their most nutritive repast in the decline of the day. The Romans of old, and the Chinese, may be cited in corroboration of this opinion. Evening is also made the period of relaxation and amusement, like holidays in autumn, to dissipate those sad ideas of dissolution and death, which so naturally follow the exhaustion of our organs. Hypochondriasis and melancholy are aggravated in a singular degree in the evening; and persons who sleep long in the morning, or only live after sunset like subterranean animals, have an evening existence, and become in general nervous and serious. Hence they soon grow old, independent even of the disorders to which this kind of existence exposes them.

Finally comes the night to close the circle of the diurnal revolution. This period includes the time from nine o'clock in the evening till three in the morning. The animal œconomy, even though watchfulness be preserved, suffers an extraordinary depression, partly from the absence of external stimuli, from darkness, nocturnal coldness and humidity, and partly by the concentration of vital power in the interior, and the lying or horizontal position which produces a stagnation of venous blood, especially in the encephalon, and a consequent disposition to drowsiness. The disorders resulting from cold, humidity, and feebleness, increase at night; the body is more susceptible to the impression of miasmata. Almost all spasms cease during sleep.

In the natural sleep, the pulse is at first slower, and the repose more profound and without dreams. All the faculties are in a state of salutary equilibrium, and a general remission exists in the activity of the functions of life. But towards two or three o'clock in the morning, the pulse rises considerably.* A peculiar shock is sometimes felt at this time.

* Bryan Robinson's Essays on the Animal Economy.

especially by the gouty, hypochondriacal, and asthmatic, and very often epilepsy, and various critical paroxysms in diseases take place, as we shall see hereafter. The vital organs now begin to recover from that state of concentration or rather of internal oppression, and we more usually awake at this hour, either by a night mare or some unknown internal emotion of our œconomy. We seldom dream but in the second sleep, which is lighter and pleasanter, owing in part to the coolness of the morning.

Independent of the habitual series of periodical movements already alluded to, such as the returns at stated hours of the desire to eat, sleep, excrete, or secrete; there are other irregular actions in the diurnal cycle, constituting the shocks of the system felt in rheumatisms, head-ache, old luxations, wounds and cicatrices, which, like so many faithful barometers, announce every atmospherical change, as rain, hail, storms, or dry weather.

Another kind of periodical change, not less important than the foregoing, is that occurring from difference of age—so that the head is the part most feeble in children, the throat and breast in youth, the stomach and liver in the adult, the bowels, urinary organs, and hæmorrhoidal vessels in old age. It follows, moreover, from this observation, that the diseases of each of these parts will be differently modified at the different divisions of the day and night.

We find then, from what has been advanced, that the day calls into activity the external life, or that of relation, which embraces the five senses, the brain, the locomotive apparatus, and the voice: it increases the activity of the pulse, and the heat of the body: it renders the body more meagre, higher coloured or browned; more nervous, susceptible and mobile: it consumes, exhausts, in fine, by its duration the sentient and percipient powers of the cerebral mass.

Night, on the contrary, throws the external life into a state of languor, while the internal, or organic, or nutritive life acquires an increase of force, of action, and *assimilating heat*. It is now that assimilation and a renewal of the waste of parts are best accomplished: cutaneous transpiration is

double in quantity to what it was during the day, or in a state of wakefulness. Great sleepers become fat and fair skinned.

This cessation of the animal functions, or those of relation, and the privation of the accustomed stimuli of light, sound, smell, &c. to the organs which perform them, by giving rest to the brain and the locomotive powers, may be considered as the cause of sleep, which is but the result of the more or less complete inaction of all the parts that constitute the external functions.

The performance of all the acts of the animal life is to a certain extent an obstacle to the action of the internal organs, charged with the office of elaborating nutritive matter; and this, agreeable to a well-known physiological law, that the human body cannot be excited to many different actions at the same time, with equal benefit to all.

The practical inference from this law is obvious, and teaches us the necessity of yielding to the ordinations of nature, by letting the outward man rest during the nocturnal period, both to prepare him for the duties of the ensuing day, and to prevent an abstraction of that vital energy necessary for the inward man or the animal. Volition may buoy us up to efforts beyond the line prescribed by nature, but cannot prevent our subsequent suffering. The studious man, flattered with the soft whisperings of ambition and literary renown, and the votary of pleasure, eager in the pursuit of sensual gratification, may encroach on the period allotted to repose; but this prolonged activity of the senses, intellect, and passions, is always at the expense of the assimilating or nutritive functions; as indigestion, irregular circulation, and respiration, and a hundred abnormal painful sensations too clearly testify. Unequal as we may think the tax thus levied on him, studious of lore, and him, the creature of dissipation, we cannot but see in its very sameness, the cause of ailments, common to men whose modes of life are otherwise so dissimilar.

The functions of respiration and circulation, are performed with energy proportionate to the number of organs in ac-

tivity, and of course are most energetic during the day. If then, in a state of wakefulness, the external organs evolve more animal heat, and the excretions outwardly are more frequent and copious, we find on the other hand, that a prolonged sleep, or a long night chills the body, retards the vital movements, diminishes the activity of the circulation and the frequency of the pulse, produces a sluggishness of movement, a temporary stagnation of the fluids. But when the stomachic digestion is completed, and the chyle is thrown into the torrent of the circulation, the lungs for sanguification, and the heart and arteries for circulation, are of course excited, and act with greater energy. During this time also, the hitherto agitated animal functions are calm, and the internal organs generally are, in their turn, the centre of vital action. If, however, any obstacle be opposed to the free exercise of the functions of the latter, particularly digestion and secretion, they react sympathetically on the heart and lungs, and precipitate their movements. Hence, it not unfrequently happens, that a person who goes to sleep with a tranquil condition of his system, generally will, after a few hours, awake and feel his heart beat strongly, his chest full, and skin hot, especially if his digestion have been imperfectly performed.

Finally, as the functions of respiration and circulation are greatly under the influence of the external senses and volition, or the movements of the brain, they will of course, in the first part of the night, be performed more slowly and equably, when the excitations from these sources are all removed by sleep. On the approach of morn, however, or two or three hours after midnight, the external senses and the brain, (or animal life,) begin to awake partially, and the above-mentioned functions are made to participate in this revival.

An attention to the above circumstances, viz. the tranquillity and repose of the internal organs during the first sleep and early part of the night, drawing with them those of respiration and circulation; the influx of chyle afterwards, or the reaction from some internal irritation of the other organs, and the partial awakening of those of animal life in the after part of the night, will serve to explain the slowness of circulation

and diminished action of the pulse before midnight, and its subsequent rise towards morning.

In the circle of physiological actions performed in the period of twenty-four hours, or during night and day, we may include parturition, which takes place in the greater number of cases during the night and towards morning.

Let us now consider the influence of the diurnal revolution on diseases, and their mortality.

Of the Morning.—We know that most diseases remit in their violence in the morning, agreeable to the axiom, "*levato sole, levatur morbus.*" This remission is so marked, that in mucous and intermittent fevers, especially the tertian and double tertian, persons in agony during the night, have got up at sunrise and regained strength enough to go about.* Insensible perspiration is besides abundant, and brings great relief, hence dropsical effusions and œdema of the legs are smaller; the hectic fever ceases at this period alone of the twenty-four hours. The nocturnal repose of the functions of the nervous system, brings likewise a remission in most spasmodic diseases. The greater number of the phlegmasiæ of the mucous membrane, such as catarrhs, croup, &c. are also diminished in violence at this time. In fine, there is scarcely a malady which has an exacerbation in the evening, that has not an intermission in the morning. Asthenic diseases even, are milder, on account of the organization gaining more energy at this epoch.

But this same morning vigour becomes the cause of the invasion of several sthenic diseases. In general, anginæ, vernal quotidian or tertian fever, and simple synocha, are evidently aggravated in the first hours of the day. Ophthalmiæ are more acute; and the hæmoptysis of young persons more readily comes on at this time, as also the sweat of phthisical patients, hysteric swellings, and worms, no doubt on account of the emptiness of the intestines; and pyrosis or water-brash. In fevers called malignant, especially in typhus, there are two exacerbations daily, but that of the morning is, according to

* Ramazzini, Constitut. epid. Mut. Art. X.

Hufeland, more violent than the evening one. So also wounds, ulcers with gangrene, carcinomas and phlegmons, receive an augmentation of heat, pain, and tension, on the return of the sun above the horizon.

Of Mid-day.—In proportion as the sun's elevation increases, bilious fevers, strong nervous emotions, as in mania and hydrophobia become aggravated. Sauvages has called *solar mania* one of those affections which only came on in the heat of the day, and which entirely disappeared at night. He also mentions a woman who became partially deranged precisely at one hour after noon. The phrenitic become violent towards two or three o'clock in the afternoon, with chills and remarkable exacerbations. Musgrave cites an acute arthritic cephalalgia, which came on daily at twelve o'clock, and Sauvages furnishes us with an analogous case. We generally find the eruption of the distinct small-pox to commence at this hour. Coma vigil, typhomania, calenture, the violent delirium of the complicated remittent fevers of warm climates, causus, tetanus and trismus, erysipelas, sun-stroke, are at times manifest before noon, but always much more during the heat of the day than at other times. Cholera morbus, spasmodic vomiting, colic, volvulus, and many gastric tertian fevers, have their paroxysms at noon. Finally, hepatitis, gastritis, the bilious diarrhœas of summer in men of an irritable habit, are more especially augmented towards the middle of the day.

Of Evening.—It was long ago remarked by Fernel, that all quartan fevers came on after noon, quotidians at early morn, and tertians towards mid-day. But it is more particularly in the evening that the paroxysms of a great number of diseases are produced. All catarrhal affections, heavy phlegmonous pains, inflammation of the organs of animal life, or of relation, are astonishingly aggravated in the evening, owing no doubt to the debility of this external life; so also cephalalgia or sick head-aches are then increased, and comatose affections and apoplexies only strike in the evening or at night: paralysis, lethargy, syncope, sudden attacks of hypochondriasis and hysteria, slow nervous fever, the oppres-

sion from dropsy, articular and rheumatic pains, are necessarily aggravated by this debilitation of the sensitive life. An intermittent febrile hemiplegia has been known to commence at four o'clock in the afternoon, and to cease at six in the morning,* and to be cured by the bark; and a periodical cough, beginning at seven in the evening, cut short by opium. It is especially in the evening that suppurative fever comes on with the wounded. Jactation, restlessness, are peculiar to a number of nervous lesions at this period. When hæmorrhages, such as epistaxis, hæmorrhoidal discharges, come on at these hours, they are almost always the result of a spasm, which, without doubt, causes that insupportable anxiety experienced by consumptive persons who have a vomica. Cutaneous diseases, itch, herpes, chilblains, are more troublesome in the evening.

It might at first be thought that the fatigues of the day, the exercise of the senses, the introduction of fresh chyle into the blood, from the nutriment previously taken, and even the irritation from remedies, dispose the animal œconomy to a general exacerbative movement; but in reply to this, it may be alleged, that even though the invalid sleep through the day, and adhere to a most rigorous regimen, hectic fever, for example, will come on at the accustomed hour. We find on the other hand, that diseases of the throat, and some other matinal affections, are dissipated in the evening.

In general the disorders of the sub-diaphragmatic organs in old men, such as those of the urinary passages, hæmorrhoids, gout, melancholy, dysentery, enlargements and obstructions of the viscera, as of the spleen and mesentery, are more particularly aggravated at this epoch.

Of the Influence of Night.—It is well known that sthenic affections exacerbating in the day, have a remission in the humidity, cold, and obscurity of the night, and that on the other hand, the diseases which are milder during the day, such as fevers, mucous phlegmasiæ, catarrhs, croup, affections of the lymphatic system, dropsy, cachexia, asthenic com-

* Torti de febribus, C. IV. p. 227.

plaints, and paralyses in general, are aggravated in the night. There are, however, certain states of our organs at particular hours, independent of the sensible properties of the atmosphere, or of light and darkness; and hence, as remarked by an ingenious writer,* to whom I am largely indebted on this occasion, the human body is, in this respect like a living clock, wound up by nature, and kept a-going by the rapid movements of our planet and the sun.

Humboldt tells of a certain countess at Madrid, who lost her voice at sunset, and only recovered it at early dawn. This paralysis of the recurrents of the eighth pair disappeared in the climate of Naples, and reappeared in that of Rome. Other nocturnal paralyses, deliriums, and vertigos, have been observed to come on at the same epoch, which renders probable what Aristotle relates of a tavern keeper at Tarentum, who was very rational during the day, but became insane regularly on the approach of night. The hemeralopses at this time experience very sensibly that singular collapse which prevents them seeing, while those labouring under nyctalopia, on the contrary, see better in a feeble light: and we find at this period some head-aches begin, and other cease. "A woman," says Baillou,† "fell into a state of insensibility at sunset, and recovered her vigour in the morning." After this general view it becomes us to notice the phenomena observable in the several hours or stated periods of the night. The oppression of incubus, for example, only comes on in the first sleep; when also the suffocating feeling from ascites is most distressing. It is the same with the venereal pains of the bones, rheumatism, and scurvy. Asturian, leprosy, croup, catarrhal affections, hooping cough, and periodical cough, are greatly aggravated during this same period. It is then also that gangrena senilis, passive hæmorrhages, so called, petechiæ, and the danger from adynamic or low fevers, and contagious and pestilential ones, are increased on account of the general depression in the animal œconomy.

Towards two or three o'clock in the morning, when the

* Virey. † Epidem. p. 48.

pulse rises after the first sleep, another order of actions begin. Sydenham was astonished to find the gout make its attack so exactly at this time. Floyer makes a similar remark on asthma. Dropsical spasms, violent palpitations, which awake the alarmed hypochondriacal, or frightful dreams, are then experienced; it is then that somnambulists rise and move about, whilst the wakefulness of old men, and that produced by slow fever, come on. The greater number of epilepsies, the paroxysms of which supervene in the night, declare themselves at this period.

After this state of spasm, as it may be termed, there is an excitation not less remarkable. The consumptive then have sweats; gastritis and hectic fevers are exacerbated; the apthæ and miliary eruptions of children then effloresce; the critical sweats in mucous fevers, different eruptions, tinea, and others begin, or are augmented. The dyspeptic invalid, who awakes perchance at midnight or a short time after, and feels his tongue and mouth moist, must be often surprised at the change in his feelings at early morn, when the same parts are rough, parched and loaded. The most salutary critical perturbations are then brought about, for they are prepared by sleep, which leads to a morning remission. Winter, old age, lymphatic temperaments, are aggravating circumstances in nocturnal affections.

Let us conclude these remarks on the nocturnal period, by repeating the observations of Ramazzini, Home, and Pringle. The first tells us of an epidemic disease in 1691, the symptoms of which became alarming after sunset, to such a degree that the sick were in a state of extreme depression, and almost dying during the night. The two last named writers have transmitted to us the history of an epidemic remittent fever which prevailed among the English troops in Flanders, in 1743, and which presented the same characters. There was a regular and almost entire remission of the symptoms during the day, no complaints made; the pulse not much accelerated; but on the approach of night, uniformly and without any sensation of coldness, the fever was aggravated, and the symptoms became so intense that the patient was often

delirious. In the morning again the pulse did not indicate the danger which was just escaped.*

As respects the proportionate mortality in the diurnal revolution, Virey tells us in his Thesis, that the greatest number of deaths happens at early morn, rather after than before sunrise, that there are more in the day than in the night, by a sixth; and that in the evening the greatest mortality is on the approach of night. More than one-half die at different hours, according to the season, and the rising or setting of the sun. In summer, in the months of June, July, and August, the mortality is sensibly increased towards two or three o'clock in the afternoon, owing doubtless to the heat, since this epoch is healthy in the cooler months.

The periods in which the fewest deaths occur, are from ten o'clock at night till three in the morning, corresponding to that of the first sleep; as also those from eight to ten in the morning, and from twelve to one in the day. It would follow from this that the inauspicious hours, *(horæ infaustæ,)* for the sick, must be also the least favourable to persons in health; the same causes acting, we presume, on all. It is probable, moreover, that as nature determines favourably or unfavourably by the periodical returns, which we have seen correspond with certain hours in the day, people are most liable to perish at the hour when the disorders with which they are attacked has its exacerbation.

The inferences to be drawn from this knowledge of the periodicity of the functions of the animal œconomy in health and disease, are such as to admit of the greatest variety of application in hygiene, pathology and therapeutics. We have seen that each period of the diurnal revolution has a peculiar character, marked by the excitation of a system of organs in relation with it.

Sleep during the night, wakefulness in the day, an active matinal life, relaxations in the evening, such is the natural order of things, and the man of nature, the child and the country-

* Dissertatio Medica Inauguralis de Febre Remittente. Auctore Franciscus Home, 1750.

man, who are obedient to these instinctive impulsions, commonly enjoy vigorous health. They who have been enervated and enfeebled by long watching, exercises, and exciting pleasures prolonged through the evening on to the midnight hour, can only hope for a restoration of health, juvenile strength, and mental vivacity, by retracing their steps and following the course pointed out by nature, and sanctioned by the experience of all ages and nations. The old man who sleeps but little, and the dissipated and indolent one who sleep long in the morning, dislike retiring to rest until the night is somewhat advanced; while the child who goes to sleep early awakes at the dawn. The former accelerate the approach of the evening and decay of life by such means; the last keeps up the freshness and beauty of its morn.

The hour of repast cannot be a matter of indifference, and ought to be regulated by the periods of the night and day, as well as by the pursuits, age and constitution of the individual. It is known that nutriment taken in the evening produces an accumulation of mucosities or glairy juices in the intestinal canal. If then we may presume that other periods make other humours predominate by digestion, (bile for example taking the ascendency in the heat of the day,) the morning repast will be the most salutary and renovating. Would it not be better for the old man to take his meal in the morning, and the one of a lymphatic constitution in the heat of the day. Our advice on such subjects must, however, be modified by the condition of the digestive organs: thus in the states, already mentioned, of morning debility of these parts, some time might be allowed to elapse after rising, and a tonic mixture or infusion drunk to produce a slight reaction before food is taken. So also in chronic periodical affections which correspond with the physiological excitations in the diurnal cycle, we might hope to remove them by inverting the usual order in the habits of the individual in reference to diet, exercise, and even sleep. This means of relief now suggested has been too much overlooked in the treatment of chronic diseases, which are assailed in a careless

manner, without physiological guidance. The difference in the hours of attack of any disease will materially affect its diagnosis by the intelligent physician. An epilepsy, for example, the paroxysms of which come on constantly in the evening, will be found to have a different cause from the epilepsy habitually coming on in the morning, and would indicate a different method of treatment—the first being probably more nervous than the second.

We ought also to inquire, whether there does not exist a certain affinity between night and cerebral affections, by which their violence is augmented; and if the diseases of the thorax are not aggravated in the morning, and those of the stomach, liver, and spleen, governed by the heat of the day; and the disorders of the hypogastric viscera by the evening, as many facts would seem to announce.

How vitally important is the study of those opportune pauses or remissions and intermissions, which must often be taken advantage of at the very hour, as in periodical fevers; for if the occasion be once missed, it may never again return, and the patient will be carried off in the next paroxysm. The same advantages attend a careful observation of the daily periods of many other desolating diseases, so as to learn their tendency, returns, critical perturbations, the precise hour of hæmorrhages, evacuations by sweat, urine, stool, expectoration, &c. If we neglect these circumstances, we know not the time when a remedy can be given with advantage, and may as often increase the disturbance in the animal œconomy as tranquillize it. By knowing whether diseases, such as some contagious ones, pursue a determined course and have a certain duration in despite of all therapeutical agents, we remain satisfied with moderating the more violent symptoms, preventing disorganization of parts or new formations, without sinking the system too low for the performance of its necessary functions. On the other hand, in diseases of habit, as in prolonged intermittent fevers, some epilepsies, various nervous affections, we attempt the revolutionizing or perturbating plan to break up the diseased associations. We are at the present time unhappily too artificial

in our views of disease. If we bring our therapeutical phalanx into action, it is all we ask, forgetting that we may prostrate without destroying, and drive away the enemy from its lodgment only that it may take another still more disadvantageous to us. If we are to be the servants of nature in the cure of disease, it behoves us to watch with assiduity its augmentation and decline, its exacerbation and remission, and to distinguish its natural periods from those caused by our own presumptuous haste or ignorance. This is a copious theme on which, perhaps, I may hereafter be tempted to dilate.

Every medicine is not equally indicated at every hour, a truth not sufficiently dwelt on by writers and teachers of Materia Medica. Thus, narcotics, sedatives, &c. would, except in extreme cases, be misplaced in the morning, when all the faculties tend to wakefulness; but these same remedies will have a more profound and salutary action in the evening, because the powers of nature then tend to repose and sleep. Hence SYDENHAM always prescribed an opiate on the evening of the day when he had administered an emetic or a purge, and this practice is very generally imitated to calm irritation.

The morning remission is generally the chosen time for the greater number of evacuants and alteratives, vermifuges, astringents, and tonics, as the first passages are then most empty of alimentary substances.

Baths, lotions, emollients, and cooling remedies, have a better effect after the great heat of the day, on the muscular, fibrous, and nervous systems; hence we find that the ancients used the bath after their *cena* or supper. Bleeding or deplesion of the venous system, especially if there is a threatened congestion of the brain, is better in the evening. But if there be depression or prostration of power, as in low fevers, we must, as the night advances, apply blisters and rubefacients, and urge the use of stimulating and cordial remedies, so as to keep up the action of the system until after midnight, and carry thereby the patient through the critical hours immediately succeeding it, as it is then we most frequently see

him begin to sink, and if unaided he becomes more and more depressed until morning, when death closes the scene.

A more extended view of the subject of periodical actions in the animal œconomy would lead to an investigation of the regularly recurring influence of the moon on our earth, its productions and inhabitants, and the effect of the seasons, particularly at the equinoctial and solstitial periods. But enough has been advanced at present to serve as useful hints to the industrious and observing physician, and to provoke him to a regular investigation of phenomena, to which little more than allusion has been made in this essay. Hereafter I may, perhaps, prosecute the inquiry more in detail.

ART. VIII. *On Digestion.** By D. FRANCIS CONDIE, M. D.

IN the following essay, it is my intention to offer some observations in objection to the commonly received doctrines of Digestion; or of that process, by which the aliment introduced into the animal system, is converted into matter proper for the growth of the different organs, and for the supply of that waste which is continually taking place through the medium of the absorbents.

To express all the modifications the aliment undergoes, from its reception into the mouth, until its conversion into blood, we possess no one appropriate term. Physiologists have heretofore contented themselves by naming the process, according as it takes place in the mouth, the stomach, the duodenum, &c.—mastication, digestion, and chylification. While we are under the necessity of making use of these terms, it must, however, be kept constantly in mind, that they express only different stages of one and the same pro-

* The substance of this essay was comprised in a thesis presented to the Medical Faculty of the University of Pennsylvania in 1817, and subsequently in a lecture read before the Philadelphia Medical Society, in 1822.

cess; each preceding one, merely effecting changes in the aliment to fit it for the proper action of the organs into which it is subsequently conveyed.

It has been asserted, by almost every writer on this subject, that the process of digestion is one of the distinguishing marks of the individuals belonging to the animal kingdom—they alone being possessed of digestive organs. This, however, is not strictly true; for certainly, the vegetable which selects, from the surrounding soil and atmosphere, those principles necessary for its growth and support, and assimilates them to its own nature, performs, equally with animals, a perfect digestion. This identity of the process in these two kingdoms of nature, was hinted at by HIPPOCRATES, who compares the stomach of animals to the earth, from which plants select their nutriment. "Quemadmodum terræ aboribus, ita animalibus ventriculum." Nor is vegetable digestion of so simple a nature as a superficial view would lead us to suppose; it has been proved, particularly by the experiments of LAMPODIUS, BRACCANOT, VAUQUELIN, &c.* that vegetables yield earthy constituents, which formed no part of the soil on which they grew; thus the cereal plants generally yield a considerable portion of siliceous earth,† which, however, is not taken up from the soil in that state, but is undoubtedly a remote product of the digestive process; for even when the earth in which these plants are raised is entirely divested of its silex, the plants still yield it upon analysis, though probably in a less quantity than before. The chemist EINHOF, also, has obtained calcareous earth from the cones of pines, growing in a sterile soil, containing not one atom of lime.‡ But, without resorting to particular species of plants, for the proof of our assertion, every vegetable which meets our eye, presents us with sufficient evidence of a digestive process; the formation from a foreign substance of

* Dictionnaire des Sciences Medicales.

† M. Vauquelin on analysing the ashes from burnt oats, by means of the nitric acid, discovered them to contain 607 parts in the hundred of pure silex, and 0.393 of phosphate of lime.

‡ Dictionnaire des Sciences Medicales.

the sap; of various saccharine, acid, gummy, and resinous juices, requires equally with the formation of the chyle, the blood, &c. a decomposition and a recombination, in different forms, proportions and circumstances of the elements of the pabulum upon which the vegetable or animal subsists. If, indeed, digestion be considered as existing in the greatest perfection, according as the particular subject is capable of assimilating to its own nature, substances the most dissimilar, the point of superiority in this respect must be yielded to the vegetable; they in many instances, being nourished from mineral substances, upon which the animal stomach is incapable of producing any change. But waiving this digression I proceed to the more immediate subject of the present essay.

It is unnecessary, in a paper like the present, to enter into any anatomical description of the organs appropriated to the function under consideration; suffice it to say, that a continued membranous canal of unequal dimensions, opening at one end in the mouth, and terminating at the other in the anus, and so convoluted, as, when stretched out, to be about six times the length of the individual from whom it was taken, constitutes, in the human subject, the digestive apparatus. Into this canal open the excretory ducts of various glandular bodies, which pour into its cavity certain fluids, the presence of which is generally supposed to be essentially necessary in the digestion of the aliment; while from its parieties arise an immense number of that highly important class of vessels the absorbents.

It has been ascertained, that a relation exists between the length of the digestive canal, and the nature of the food upon which animals naturally subsist: the more foreign the alimentary matters are from the system, the greater length of time is it necessary they should be retained in the body, in order that the requisite changes may be produced in them, and the nutritive matter fully extracted. Thus, in herbivorous and graminivorous animals we find a great length of intestine, and, for the most part, a complicated and capacious stomach; while those animals who live upon flesh, &c. the carnivorous, have a stomach of the utmost simplicity, and a

small and short intestinal canal, formed so as to give a ready passage to the food, which, under a smaller bulk, contains a greater proportion of the elements of the chyle, which probably, at the same time, are more readily separated from the excrementitious portion.

Between these two species man holds a middle rank, being neither exclusively herbivorous nor carnivorous, but from the very nature of his frame omnivorous; he ranges throughout creation, selecting his food alike from nearly all its productions, according as a fastidious appetite, or more stern necessity directs. He can revel in the vast variety of aliments, drawn from the endless stores of the vegetable and animal kingdoms; while, on the other hand, he can live healthful and strong upon a single substance, and the most simple form of food.

Though thus various is the aliment of man, yet as it is all derived, either directly or indirectly, from the vegetable kingdom, it is to this latter, as observed by Cullen, that we are to direct our attention, in endeavouring to discover the nature of that principle, which renders it capable of supplying matter for the growth and support of the animal system. It will be evident, that such substances only are fitted for this purpose, as contain all, or a majority of those principles which enter into the formation of the chyle, and that the food is more or less nutritive, according as it is more or less similar in the proportion of its elements to this fluid; and, accordingly, if we examine by the test of chemical analysis, those vegetable substances which experience has proved to contain the greatest proportion of nutritive matter, we shall find them all to differ but little, in the principles entering into their composition, from the lower degrees of animalized matter.

Of these alimentary substances, a continual supply is essential for the preservation of the health, vigour, and even life of the system; lest, therefore, he should neglect this important circumstance, man, in common with every animal endowed with locomotion, is furnished with faithful monitors, which never fail to remind him of the exigences of his sys-

tem; and as life would be endangered were these admonitions but feeble and transitory, hunger and thirst are among the strongest and most impatient of all his sensations, while the gratification of them is accompanied by the most exquisite pleasure.

Of Chymifaction.

Our food, after being completely masticated, and reduced to a semi-fluid state by commixture with the saliva, which is poured into the mouth from the surrounding glands, is conveyed through the œsophagus into the stomach, whence, after undergoing certain changes, it passes into the first of the intestines—the duodenum.

Although it does not appear, that the mixture of the saliva with the food, produces in the latter any important change, it still retaining all of its chemical, and many of its physical properties, yet, this mixture, besides facilitating the mastication and deglutition of solid substances, appears also to be in some degree necessary to prepare the aliment for the action of the stomach; this latter being always more or less perfectly performed, according as the food is more or less intimately combined with the saliva. The chemical analysis of this fluid, affords no explanation of its use in digestion.

Of the exact nature of those changes which the aliment undergoes in the stomach, or the manner in which they are effected, no satisfactory explanation has as yet been offered. But we are not from this to infer, that physiologists have been idle in attempting to explain this interesting process. A review, however, of their several hypotheses, will prove rather the fertility of their imaginations, than their acquaintance with the laws of the living system.

The most ancient theory of digestion we have upon record, is that taught by Hippocrates, and by most of his contemporaries, which considered the process as effected by a something which they style *coction.* In applying this term to digestion, however, we are not to suppose they meant that the food underwent, in the stomach, a change analogous

to that produced in substances by boiling, but, on the contrary, they intended evidently to express by it a real vital change in the aliment, without indicating the agents by which it is effected.

Others of the ancients, we are informed by Celsus, asserted that digestion was performed by actual *trituration:* whilst a third class, despising the opinions of the two former, taught that neither coction nor attrition took place in the stomach, but the food undergoing no other change than from mastication, was in that state distributed throughout the system.

Near the end of the seventeenth century, the ancient theory of attrition was revived; and it acquired new force and importance from the character and calculations of the celebrated Pitcairn, whose computation of the muscular strength and pressure of the stomach and surrounding viscera, is too ridiculous to be noticed.

Mere *maceration*, favoured by the heat of the stomach, by a commencing putrefaction, and by the continual agitation the food undergoes in the stomach, was supposed by Haller as sufficient to account for all the phenomena of digestion.

But among all the hypotheses which have been advanced, the only one which would appear to demand attention from its apparent plausibility, and the merit of its supporters, among whom we may enumerate Pringle, Macbride, Cullen, and Rush, is that which supposed "a spontaneous intestine motion" to take place in the food, after its introduction into the stomach, "by virtue of which it passes into a new order of combination;" and as we accelerate the fermentative process by adding to those substances which are undergoing it, a portion of matter that has already fermented, so it has been imagined, that "a sort of leaven constantly exists in the stomach, formed by a subtile acid," or consisting of a portion of the food remaining from the preceding digestion. This fermentation was by some supposed to be analogous to the putrefactive, by others to the vinous and ace-

tous. The partizans of the latter, adduce in its support arguments like the following.

1st. They have endeavoured to prove that a gas was constantly evolved in the stomach. 2d. That the heat and moisture of the stomach are such as would necessarily induce fermentation. 3d. That the food itself, and those animal fluids with which it is mixed during mastication, &c. run quickly into fermentation; and 4th. That there is an acid always present in the stomach.

In relation to the three first of these propositions, and the inferences which are drawn from them, it is unnecessary on the present occasion to say any thing; the arguments and experiments by which they have been fully refuted, are detailed at length in most of the modern works on physiology. With respect, however, to the existence of an acid in the healthy stomach, there appears to be much diversity of opinion, and experiments have been performed, the results of which are of so contradictory a nature, as by no means to settle the point. While on the one hand, SPALLANZANI,* GOSSE,† DUMAS,‡ STEVENS,§ FORDYCE,‖ CARMINATI,¶ SPENCER,** RICHERAND,†† THENARD,‡‡ and others, have asserted that in numerous experiments, they could find no traces of acidity in the fluids of the stomach, under ordinary circumstances, and while the animals were fed upon their appropriate aliment; on the other hand, opposed to these eminent physiologists, we have the authority of HUNTER,§§ who asserts, that "in all animals, whether carnivorous or not, which he examined, he always found an acid present in their stomachs, though not a strong one;" of BRUGNATELLI,‖‖ who

* Dissertations on Nat. Hist. vol. 1, (of the translation.) † Ibid.
‡ Principe de Physiologie, tom. iv.
§ Thes. inaug. de aliment. concoctione, Edinburgh, 1777.
‖ Treatise on the digestion of food, 3d ed. Lond. 1791.
¶ Journ. de Physique, tom xxi—xxvi.
** Essay on digest. Philada. 1802. †† Elements of Physiology.
‡‡ See Magendie's Physiology.
§§ Observations on the Animal Œconomy, Lond. 1786.
‖‖ Saggio d'un' Analisis Chimica de' Succi Gastrici, as quoted by Johnson, "Hist. of Animal Chemistry," vol. I.

was of opinion that the fluids in the stomachs of all animals, was universally acid; of MACQUART and VAUQUELIN,* who have attempted to demonstrate, that the fluids contained in the stomachs of oxen, calves, sheep, &c. invariably indicate the presence of uncombined phosphoric acid, and of Dr. YOUNG, of Maryland, who discovered the presence of this acid in the human stomach, and in that of frogs.† Some interesting experiments in relation to this point, were made by M. De Montégre, of Paris, in 1804, by which he ascertained, he supposes, that during chymifaction, every species of food becomes acid, and that the process is imperfect, unless this acidity be produced. The proper fluids of the stomach exhibited also traces of acidity.‡ This latter fact is confirmed by the more recent experiments of Professors TIEDEMANN and GMELIN.§ They found that the gastric fluids of the dog, cat, rabbit and horse, evinced the presence of an acid, as also did the chyme in the duodenum.‖

In whatever manner, however, this point may be finally settled, it will in no degree influence us in the rejection of the theory of gastric fermentation, for it is confessed, by all later physiologists who contend for the existence of this acid, that it is not produced by fermentation. Tiedemann and Gmelin appear to consider it as a secretion; Montégre, as produced by a vital action of the stomach on the food.

Rejecting, without hesitation, all the preceding theories, the physiologists of the present day have attributed all the changes which the aliment undergoes in the stomach, until its conversion into chyme, to the action of a peculiar fluid, which they presume to be poured into the stomach by a number of secreting orifices situated on its inner coat—and hence styled the *gastric juice.* REAUMUR was probably the first who suggested this idea of digestion in the stomach, being

* Journ. de Physique, 1788.

† Expt. Enquiry into the Princ. of Digest. 1803, Philada.

‡ La Gaz. de Sante, quoted by Chaussier and Adelon, Dict. des Scien. Medical.

§ See Edin. Med. and Surg. Journ. July, 1821.

‖ See also Magendie's Physiology.

the result of a chemical solution,* though it is to Spallanzani we owe those numerous and diversified experiments, which are supposed to have fully established the fact. Extensive experiments with the gastric juice have also been made by Dr. Stevens of Edinburgh—Gosse of Geneva—John Hunter, and a number of others, all of whom ascribe to it powerful solvent properties. Spallanzani has imagined it to be capable of digesting substances out of the stomach, and Hunter, even the stomach itself, after a sudden destruction of vitality.†

But, notwithstanding the weight of these authorities, the existence of such a menstruum is by no means an undisputed fact. Professor Chaussier, has long since, in his course of lectures before the Faculty of Medicine at Paris, freely expressed his doubts as to its existence, and declares, that in all his experiments, he could never discover in the stomach, any thing excepting a mixture of its proper mucus and saliva.‡

In 1812, also, M. de Montégre published in the "*Gazette de Santé,*" a series of experiments in which he had been for some years occupied, which, if they be correctly detailed, go certainly very far towards overthrowing the whole theory of a gastric solvent. He declares that what has been named the gastric juice, is nothing else than pure saliva mixed with a portion of the same fluid altered in some of its properties by the action of the stomach. In repeating the experiments of Spallanzani with the gastric juice, he was unable to produce that solution of the food out of the body, which the latter has denominated "artificial digestion," neither was he able to discover any difference in the phenomena presented by substances submitted under similar circumstances, to the action of the saliva, or to that of the fluids contained in the stomach.§

* See Memoirs of the Acad. of Sciences, 1752.

† Philosoph. Trans. 1772, vol. 62.

‡ Dict. des Sciences Medical. article *Digestion.*

§ The experiments of Montégre are referred to by Magendie, in a manner which indicates that he has no doubt of their correctness.

From the foregoing facts, as well as from some stated by Wilson Philip, which will be hereafter referred to, I am inclined to doubt, whether the result of a careful repetition of the experiments with the fluids secreted in the animal stomach, would confirm all the conclusions of former physiologists.

Admitting, however, the existence of a gastric solvent, it by no means follows that it is the sole agent in effecting chymifaction. This has already been proved by Dr. Fordyce, in his very excellent treatise on the digestive process.* If indeed the gastric juice, merely by virtue of its specific properties, independent of any other power, converted the food into chyme, it is evident that the same effects should result when it is added to food without the stomach, under a similar temperature, &c. to that in which it is placed in the digestive organs. Now, though Spallanzani and a few others have succeeded, as they inform us, in "softening and dissolving the food," by the gastric juice out of the body, yet even from their own reports, it is very evident that the result of this "artificial digestion," if it can be allowed that name, is by no means true chyme.†

But, even upon the supposition that the gastric juice does act by virtue of its solvent powers, in the conversion of solid substances into chyme, how are we to explain the digestion of the numerous class of fluid matters employed as aliment. Add gastric juice to wine, out of the stomach, and will it destroy its colour, taste, smell, and chemical properties? I reply without fear of contradiction that it will not—and yet, introduce into the stomach a portion of this fluid, and in a few hours its identity will be totally destroyed.

Can it indeed be reasonable to suppose that the gastric juice, which we are informed is the same in all animals, and at all times during a healthy condition of the stomach, should by virtue of its solvent property, be capable of converting

* Third edit. Lond. 1791.

† See Fordyce on Digestion—the Experiments of Montégre—Magendie's Physiology, &c.

every variety of matter employed as food—whether vegetable or animal—simple or mixed, into one and the same substance—chyme.* To suppose, as some even have, that a different solvent is afforded by the stomach, adapted to every variety of food to be digested, is rather increasing than diminishing the difficulty.

From the above circumstances, and others hereafter to be noticed, we may safely conclude, that during chymifaction, the aliment undergoes other changes than mere solution in the gastric fluids.

We are to consider that the stomach is not a passive vessel, but that it is, in common with every other organ of the animal system, endowed with a specific vitality, which adapts it for the performance of its appropriate functions, and by virtue of which it acts upon the alimentary matters introduced into it, producing in them an actual change of composition. Chemistry has taught us, that from a few primary elements, variously combined, all the variety of substances which constitute this globe, its productions and inhabitants, are formed. Animal matter has been found, on analysis, to consist of azote, carbon, hydrogen, and oxygen, in certain proportions; and held in combination by laws, the effect of vitality, of the nature of which we are totally ignorant. The articles employed as food, and out of which the animal frame is formed, contain, as already remarked, nearly the same principles, differing however, in their proportions, and perhaps, materially, in the manner of their combination.

The entire process of digestion, appears then to consist in the destruction of the combination which subsists between the component principles of our food; in the selection of such of them as enter into the composition of the animal system, and the rejection of whatever is in excess, and in the recom-

* If digestion be performed by a solvent fluid, this menstruum must be the same in all animals, for it has been proved by repeated observation, that animals naturally carnivorous or phytiferous, can digest equally well either vegetable or animal matter. See Hunter on the Animal Œcon. Buffon's Nat. Hist. Young's Experiments on Digest. Barton's Cullen, vol. I. (in a note,) &c.

bination of these elements in the form of chyle, blood, &c. or, in the language of Richerand, "to make the nutritive matter undergo a more advanced stage of composition, to deprive it of a part of its carbon, and of its hydrogen, and to make azote predominate."*

But we are not to search for an explanation of this decomposition and recombination in the laws which govern chemical processes. The vital power of the digestive organs completely overpowers the tendency to fermentation in the substances employed for food, while it induces in them a modification totally inexplicable by the laws of chemical affinities. "Food placed in all the chemical circumstances that can be conceived similar to those in which it is placed in a living stomach, will never be converted into chyme, but will undergo changes totally different; animal food will putrefy and vegetable become acid."†

Every circumstance connected with chymifaction indicates, in a very striking manner, that it is solely a vital action; and that the stomach, as we have stated, performs its office by virtue of its functional life, and not merely by affording a chemical menstruum. So intimately does this process depend upon a perfectly healthy condition of the digestive organs, and of the system generally, that it is retarded, or even entirely suspended, by any occurrence capable of disturbing either; thus, during the presence of various passions of the mind, as fear, grief, anxiety, anger, &c. the aliment, instead of becoming converted into chyme, is allowed to pass into a state of fermentation. Even after digestion has commenced and made some progress, any of the above passions being suddenly excited, will put a stop to its further progress.

Profound meditation, the administration of narcotics, certain effluvia, over distension of the stomach, &c. produce a similar effect; and Gosse has remarked, that even leaning with the breast against a table after a meal, retards digestion.

It is well ascertained, also, from the result of experiments

* Elemen. Physiol. † Fordyce on Digestion.

long since performed by Baglivi, Valsalva, Haller, &c. but particularly by physiologists of the present day, Legallois,* Philip,† Brodie,‡ Vavaseur,§ &c. that a ligature upon the eighth pair of nerves, or their entire division, completely destroys the digestive function of the stomach; the aliment undergoing no change but what it would have experienced under similar circumstances of heat and moisture out of the body. The above facts cannot in any satisfactory manner be accommodated to the doctrine of chymifaction, being merely a solution of the food in the gastric juice.

It has been argued, however, in relation to the effects produced by a division of the eighth pair of nerves, that upon their influence depends the secretory function of the stomach, and that when their integrity is destroyed, digestion cannot take place, in consequence of the gastric juice not being formed. But this argument is easily answered in the words of Wilson Philip himself; "It deserves notice," he observes, "that although the eighth pair of nerves have been divided, the food is found covered with apparently *the same semi-fluid which we find covering food in a healthy stomach.*"‖ And again, in his letter, addressed to the editor of the Journal of the Royal Institution, he states, "I can truly say, that in the living animal, *I never found the secreted fluids suppressed* by dividing the nerves." "The object of my experiments was not to show, that when a secreting surface is deprived of the whole of its nervous influence, secretion is prevented; but, that when any considerable part of it is withdrawn, *the properties of the secreted fluid are so altered*, that it is no longer fitted for its purposes in the animal economy."¶ These candid statements, while they prove that the secretion of the gastric juice is not destroyed by the division of these nerves, constitute, in my opinion, an insurmountable objection also

* On the Principles of Life, page 197, (translation.)
† Enquiry into the laws of the vital functions, 2d ed.
‡ Philos. Trans. 1814.
§ See Ed. Med. and Phys. Journal, April, 1824.
‖ Inq. into the laws of the vital functions, 2d ed. p. 124.
¶ Journal of Science and the Arts, vol. ix.

to the idea of digestion in the stomach depending upon the action of any fluid secreted by that, or any other organ; while they, on the other hand, confirm the doctrine of its being purely a vital process, and effected by the specific action of the stomach itself. In the above experiments we are presented with food, subjected to the action of the gastric juice in the stomach of living animals, without being converted into chyme, in consequence of the organ being deprived of those nerves, upon the influence of which its peculiar function depends; and we find, that the only manner in which this fact can be explained to subserve the doctrine of a stomachic menstruum, is by presuming that the destruction of these nerves has vitiated the gastric juice, so as to deprive it of its solvent powers. But, I would ask, what proof is afforded us of any such change of properties having taken place in the gastric juice in the instances referred to? No other than the bare supposition, that chyme is produced by the agency of a chemical solvent secreted in the cavity of the stomach. This kind of reasoning, we are persuaded, will satisfy but few —the very point in dispute being taken for granted.

In proof of chymifaction being effected by the gastric juice, much use has been made of the statements of Hunter, Burns, and others, in relation to "*the destruction*" of the coats of the stomach by the gastric fluid after death. But, admitting that this phenomenon, which is confessed to be of rare occurrence, can be explained in no other manner, have these gentlemen even attempted to show that the coats of the stomach were in these instances converted into chyme? So far from this, the statements of Hunter, as well as those of Wilson Philip, who tell us, that while they "found part of the stomach *dissolved*, the recent food it contained remained *wholly* undigested,"* prove, on the contrary, that chymifaction, notwithstanding the presence of pure gastric juice, cannot take place excepting in a living stomach.†

* Essay on Indigestion, 2d ed. page 34.

† The reason given by Wilson Philip, why the stomach, and not the food, is digested in these cases, is the cessation of the peristaltic action

It is an important fact also, that contact of the aliment with the coats of the stomach is essential to its conversion into chyme. This is proved by the highly interesting experiments of Dr. Philip. This gentleman found that the digestion of the food was effected only from the circumference to the centre; and that, by an appropriate action of the stomach, as soon as the exterior layer has undergone the requisite change, it is removed towards the pylorus to be conveyed into the duodenum, while a new surface of the aliment, thus exposed and remaining still unchanged, is presented in its turn for digestion.* Now, although this state of things is not actually incompatible with the supposed agency of a solvent fluid, yet it appears to me, strongly to favour the idea of chymifaction being the result of the action of the stomach itself upon the aliment; for it would be reasonable to suppose, that as the food gradually accumulates in this viscus, it would become throughout so completely imbued with the gastric juice, that if chyme were produced solely by its action, the process should go on in all parts of the mass at the same time. We are informed that the gastric juice is constantly secreted, and that its secretion is augmented during mastication, so that each portion of our food meets with this fluid immediately on its introduction into the stomach.

The effects of gastric digestion upon the general system are in proof of its being a purely vital action; in fact, so great a portion of life does the process require, that "the vital power seems to forsake the other organs and concentrate itself on that which is the seat of the digestive process."† There is languor of all the other functions; the exterior senses have

of the stomach at death, in consequence of which, he supposes, that the external portion of "the food becoming fully *saturated* with the gastric juice, *neutralizes* no more, and no new food being presented to it, it necessarily acts on the stomach itself." This explanation, however ingenious, is very far from being satisfactory. Dr. Philip has himself confessed, in another portion of the same essay, that "the gastric fluid, to a certain extent, *pervades* the contents of the stomach." See Essay on Indigestion, 2d ed.

* Philip on Indigestion. † Richerand—Element. Physiol.

less vivacity; the skin contends with less success against the effects of atmospheric temperature, and is even affected with a slight rigour; the mind looses its activity; a sense of languor appears to take possession of all the organs of locomotion, while at the same time a considerable tendency to sleep is experienced.

The stomach, it is also to be recollected, does not during digestion, remain in a quiescent or passive state, but on the contrary, as we are assured by those who have had frequent opportunities of examining it during that process, it contracts itself in such manner as to apply its inner surface in close contact with its contents, while it exhibits a continued peristaltic action.

Rest of the body seems an essential condition to the right performance of this function—exercise interrupts or even suspends it, as has been proved by direct experiment. Two dogs, in perfect health, were fed at the same time and upon similar food; the one was permitted to remain quiet, while the other was taken out hunting, both being killed, the aliment in the stomach of the former was found converted into chyme, while that of the latter was unchanged.* I would now inquire whether, if the stomach merely afforded a solvent juice, and served as a reservoir for the food during its solution, its functions could be thus powerfully affected by the motion or rest of the body?—which of the other secretions is interrupted, or suspended by exercise?—are they not rather increased? mere solution also, I should think, would be accelerated rather than retarded, in consequence of the agitation communicated to the stomach by the motion of the body.

In reviewing cautiously all the experiments which have been performed, in relation to the subject of chymifaction, I think there can be no doubt, however, that the stomach actually does afford a fluid, the action of which is necessary to prepare the food for digestion, but which, no more than the saliva, is of itself capable of converting it into chyme. Its

* Hunter. See also observations to the same effect by Gosse.

use may be to soften the aliment, and to correct in it any tendency to fermentation; for these are the only phenomena this fluid has exhibited when applied to substances out of the body; while the result of those experiments which have been performed by introducing food into the living stomach, cannot be cited as conclusive proof that the gastric juice possesses any other properties.

It will be proper to observe here, that chyle is not the result, in any instance, of those changes produced in the food by the action of the stomach; this is proved by the experiments of Fordyce, Cruikshanks, and others. In this portion of the digestive organs, the aliment is merely fitted for the further changes it is to undergo in the intestines.

In relation to the time the food is retained in the stomach previous to chymifaction being fully effected, nothing satisfactory can be determined; the action of this organ being affected by the greater or less degree of digestibility in the aliment, as well as its quantity; the age, sex, and mode of life of each individual; the vigour of the stomach, the general condition of the system, and a variety of other circumstances.

In concluding the subject of chymifaction, I am perfectly aware, even should it be allowed, that I have succeeded in proving all for which I have contended, the question, How does the stomach act upon the food? remains still unanswered;—this must necessarily be the case, so long as we remain ignorant of the nature of even the most simple of those actions, which depend for their performance upon the vitality of the system; but our inability to discover the mode in which the stomach performs its functions, is no reason for our retention of a theory encompassed with difficulties and contradictions, which augment in proportion as we more closely investigate the phenomena of digestion. Very recently Dr. Smith, of Vermont, has attempted to prove that the stomach converts the food into chyme, by its veins absorbing such portions of the former as are proper, without further change, to be carried into the system. This idea is deserving of considerable attention; that a part of the aliment is absorbed in the stomach cannot I think be doubted, and that the absorbent

vessels of this portion of the digestive canal should produce in our food all the changes necessary to convert it into chyme, is certainly far more consonant with what we know of the laws of the animal economy, and more consistent with the phenomena of digestion, than the chemical doctrine of a gastric menstruum.

Chylifaction.

The food having undergone that peculiar change, which is effected by the appropriate action of the stomach, passes from that viscus in the form of chyme, to undergo in the duodenum, new changes, equally important with the former.

The chyme, when separated from those portions of food which occasionally pass into the intestines without being digested, is found to consist of "a slimy homogeneous pulp, of a greyish colour, and peculiar odour." In the chyme there cannot be discovered upon the most minute inspection, the least trace of the presence of chyle.

In the duodenum the chyme meets with two fluids, the bile and pancreatic juice, which are constantly discharged from their proper ducts into this intestine, but more abundantly, it is said, during the presence of the chyme. These fluids have been considered by most physiologists, as of the utmost importance in effecting digestion; what, however, is their proper office, or whether they have any influence in producing the chyle, has not as yet been satisfactorily determined; the chemical analysis of these fluids presents us with no explanation of their use in the animal economy. It has been supposed by many, that in consequence of a chemical action, resulting from the combination of the bile and pancreatic juice with the chyme, the latter is converted into two distinct parts, chyle and excrement; and that, while the chyle is taken by the lacteals, the excrementitious portion is conveyed onwards in the course of the intestines to be finally discharged from the body by the anus. But, to this convenient and even plausible hypothesis, many insurmountable objections are presented. We are assured, by those who have performed the experiment, that when the ducts of the

liver and pancreas have been tied, or even when the latter viscus is entirely removed, chyle is still produced.* This, however, may appear to be contradicted, in some measure, by the recent experiments of Brodie. This gentleman tied the excretory ducts of the liver in a number of young cats, after which he found that chyle was not produced—the lacteals containing only a semi-transparent fluid.† Dr. George Fordyce, however, performed similar experiments, and obtained a different result—chyle being produced notwithstanding the bile was prevented from passing into the intestine. We know, also, that in many persons in whom, from disease, "biliary secretion is either for a considerable time wholly suspended, very deficient, or much depraved," the nutrition of the body does not appear to be materially impaired.‡ The records of the medical profession afford numerous examples of such cases. Even in the experiments of Brodie, referred to above, we have no positive proof that nutrition was suspended in the animals operated upon. It is an important fact, also, that chyle is formed by the lacteals of the duodenum above the orifice of the ductus communis coledochus, and previously to the mixture of the chyme with any portion of bile; this circumstance can be easily verified by experiments upon living animals.

But, even should we admit the presence of the bile to be necessary in order to fit the chymous mass for its conversion into chyle, it by no means results, that it is the agent by which chylifaction is produced. The action of the duodenum, like that of the stomach, is disturbed by a variety of circumstances affecting the general system, in a manner, we cannot conceive would be the case, if nothing were required for the production of chyle, than a chemical action of the bile found in the intestine, with the chyme. As in all probability, also, a portion of bile and pancreatic juice frequently find their way into the stomach, chyle should as

* Fordyce on Digestion. Brunner's Experiments, &c.

† Journal of Science and the Arts, 1823.

‡ Abernethy's Essays and Observations.

frequently be produced in this viscus, but as it has already been observed, this latter never occurs.

Neither is chyle ever found in any part of the intestinal canal out of the lacteals, whereas, the contrary would necessarily be the case, were it precipitated from the chyme by the chemical action of the bile, &c. When, however, I assert that chyle is not to be found excepting in its own proper vessels, I am fully sensible of the fact that authors may be cited, who state the contrary; but from the very vague manner in which these gentlemen speak of the chyle "floating like milk, upon the surface of the chyme," it is evident that they suppose this must be the case, not because they have actually detected it there, but merely in accordance with the erroneous theory of digestion which they have adopted.

In the course of my inquiries on this subject, I have examined the accounts of a variety of dissections recorded by different writers, and although the contents of the intestines are minutely described, yet in no one instance is mention made of chyle out of the lacteals.*

Morgagni, in his work on the seats and causes of diseases, absolutely declares the non-existence of chyle in the intestines under any circumstances, and as this assertion must have been the result of very extensive observation, it is therefore of considerable weight; his words are, "the chyle is not to be discovered separated from the other, unless parts of the aliment, excepting in its own proper vessels."† M. M. Chaussier and Adelon bear similar testimony. "Ce n'est pas cependant qu'en cet intestin duodenum le chyme soit distinctement sépararé en deux parties, la partie essentiellement reparante, ou le chyle, et la partie excrementitielle, ou les

* The only writer of any note, I have found, who states he has seen chyle in the cavity of the intestines, is Travers, who, in his work on wounds of the intestines, (page 96, et seq.) tells us he saw *a coagulum of chyle sealing up the end of an intestine*, which had been cut across in his experiments. Should we even admit that this coagulum was chyle, it is to be recollected that in this instance the lacteal vessels were wounded, and might, therefore, have permitted the escape of their contents.

† Morgagni de sed. et caus. morborum, Epis. 3, lib. iii.

fèces; tout le masse conserve encore une couleur grise; on n'en voit pas suinter les molécules chyleuses."* In the duodenum, the chyme is not separated into two distinct parts—the part essentially nutritive, or the chyle, and the excrementitious portion, or the feces, but the whole mass still retains a greyish colour, nor can there be discovered in it any particles of chyle. In evidence of this fact, we have, also, the testimony of John Bell, Dr. Young, and others.† Magendie‡ informs us, that on examining the bodies of two criminals, who had eaten, about two hours previous to their execution, of nearly equal quantities of the same food, the chyme in the pyloric portion of the stomach, and the contents of the small intestines, "appeared to be precisely similar in colour, taste, and odour"—it is evident, therefore, that he found no chyle in the intestines, notwithstanding he speaks of "a *greyish* coat" that adhered to their mucus membrane, which he supposes was "the elements of the chyle," or "chyle in *an imperfect state.*"

My own observations on this point have been, I confess, but few and imperfect. I have had an opportunity, however, of examining the contents of the intestines of various animals, killed at different periods after eating, but have never been able to detect any traces of chyle out of the lacteals.

Indeed, were chyle formed by the bile, &c. in the cavity of the duodenum, is it not reasonable to suppose, that we should frequently have it passed per anum, when the intestines have their peristalic action much increased; or even occasionally thrown up by vomiting, the action of which we know extends to the duodenum? Did chyle ever exist in the cavity of the intestines, we should presume also, that in those subjects in whom death has resulted from an obstruction of the mesenteric glands, the intestinal canal would frequently contain some portion of this fluid—but in all the dissections upon record, which have been made in such cases, we

* See Dict. des Scien. medical. article *Digestion.*

† See Young on Digest. and Nutrition.

‡ Summary of Physiology, page, 226, (of the translation.)

find no mention of the chyle being found mixed with the contents of the bowels. Should it be argued, notwithstanding, that chyle does exist in the intestines fully formed, but so mixed with the bile—the remaining portions of the aliment—the secretions of the bowels, &c. that we are unable to detect it; this, in my opinion, instead of removing any difficulties, would amount to an entire abandonment of the doctrine that the chyle is formed by the action of the bile in the intestines; for if the lacteals merely absorbed the chyle, precipitated in a perfect state from the chyme, how does it happen that we find not a particle of those substances, with which it is supposed to be so intimately mixed, to enter with it even within the orifices of the absorbing vessels. To give to the lacteals the power of selecting nothing but what enters into the formation of the chyle, while they reject every other substance, however closely combined with the former, is ceding to these vessels an office, little different from what we shall contend they actually do possess, notwithstanding we deny the office generally attributed to the bile and pancreatic juice in the formation of the chyle.

It is to be recollected that chyle is not a simple substance, but on the contrary a very elaborate fluid, consisting of at least three distinct portions, which differ in their chemical composition—one maintains its fluidity during life, but coagulates after death, or upon exposure to the air—a second continues fluid when exposed to the atmosphere, but coagulates on the application of heat—and the third consists of opaque globules of a white colour.* Now, can we suppose any one substance, or mixture of substances capable of precipitating from another a new fluid, consisting of different parts not in a state of chemical combination.

To support the idea of chyle being precipitated by the bile, &c. it must be proved, that the former is a simple homogeneous fluid, which either already exists in combination with the chyme, or that one portion of its principles is derived

* Emmert and Vauquelin, Ann. de Chimie, tom. 80—81. See also Experiments of Brande—Hunter on the Blood—Fordyce, &c.

from the chyme and another from the bile or pancreatic juice, and that its formation is the effect of a complex affinity between these substances—but if either of these propositions were true, it is evident that chyle should invariably be formed whenever bile and the other intestinal fluids are mixed with the chyme under a proper temperature—and this as well out of the body as in. "There is," observes Fordyce, "no menstruum that is capable of acting on any substance, but may be applied to in circumstances out of the body of a living animal so as to dissolve or decompose it, but if we apply the gastric juice, the bile, or any other, or even all of the juices which are applied to the food in the stomach and duodenum, we cannot form any thing like chyle out of the body."*

But it may be asked if chyle be not the result of the action of the stomach, nor yet be produced by the commixture of the bile, &c. how are we to account for its formation? I reply, that in the vital action of the absorbents of the intestinal canal, we have an agent in every respect adequate to this important task. Chyle is produced by a process analogous to that by which the different secretions are formed from the blood, the lacteals selecting from the chyme certain portions of its elementary principles, and recombining these in the form of chyle.

The lacteals are found to arise in the greatest number from the parieties of the duodenum; they commence immediately at the junction of this intestine with the stomach, and gradually decrease in number in the tract of the small, and probably do not exist at all in the inferior portion of the large intestines. Thus the moment the chyme passes through the pylorus, it is submitted to the action of these vessels, and as it passes slowly through the small intestines we find it very gradually to become changed both in its sensible and chemical properties; this as well as all the other phenomena connected with chylifaction prove that the chyle is formed by the lacteals. This theory obtains additional support from an examination of the functions which the absorbent vessels perform in other portions of the system; thus, in carrying off

* Essay on Digestion.

the old matter from the different organs of the body, which are to be replaced by the depositing of new materials from the blood, they must evidently produce an actual decomposition in the particles upon which they act, and arrange their component principles in a new order of combination. In no other manner can their operation be explained, for it is evident that the parts are not merely reduced to a state of minute division, nor have they been decomposed by fermentation, such a process would be totally incompatible with the health of the system. If then the absorbents be in this instance, capable, by virtue of their peculiar vitality of decomposing alike, muscle, tendon, cartilage, or the hardest bone, and even of overcoming the resistance afforded by the life of the parts submitted to their action, would it not be contrary to that uniform simplicity which pervades the operations of nature, to suppose that in the alimentary canal, a similar class of vessels should be reduced to mere capillary tubes, whose only office is to suck up the chyle which has been formed by the chemical action of certain secretions upon the chyme. In the economy of the chick in ovo, we are also presented with vessels similar to the lacteals, converting a foreign matter into a new substance "capable of being applied for the growth of a living body," so completely without the aid of the biliary and other secretions, that they actually perform their office for some time before the liver has even an existence.

This theory is still further supported by the fact that individuals have been nourished for a considerable space of time, solely upon nutritive substances injected per anum; in these instances the matter from which the nutrition of the body is derived being placed entirely out of the reach of the biliary and pancreatic fluids, at least in that condition in which they are supposed necessary for the precipitation of the chyle, the absorbents must necessarily be the sole agents by which it is assimilated and carried into the circulation. It is true that the persons thus nourished became weak, as well from the smaller number of absorbents in the lower portion of the intestinal tube, as from the matter injected passing quickly out of the body, while it is not, we may also presume, in a proper condition to enable the vessels in these parts to separate from it

any considerable portion of its nutritive principles—in consequence of its not having undergone previously the action of the stomach, &c. That the persons thus situated have, however, been enabled to sustain life, and even some degree of strength, the records of our profession afford incontestible evidence.

In attempting to draw any argument in support of the above theory from the digestive process, which I have proved to exist in vegetables, I am sensible of the many objections to which I am exposed, but notwithstanding, when in these latter we see living tubes assimilating to its own substance the aliment upon which the plant subsists—this taken in conjunction with the arguments already advanced, constitutes in my opinion some evidence of no inconsiderable weight, that the lacteal vessels of the animal economy perform a similar office, and not merely that of conveying into the circulation the products of chemical processes supposed to be carried on in the cavity of the alimentary canal.

To conclude; the very idea of the process of digestion in any one of its stages, being conducted by chemical agents, even if these supposed agents were competent to the task assigned them, is contradicted by every phenomena of vitality. There is, we know, in the living system, a power depending upon the influence communicated by the different portions of the nervous system, superior in every respect, and essentially different, in its mode of action, from those powers which direct the chemical changes that take place in the operations of the laboratory, and to this "unknown cause of vital phenomena," as it is termed by Magendie, must we refer the change of our aliment into chyle and blood, and the subsequent conversion of these products into the different materials constituting the several systems of which the animal body is composed; and although this may in some degree be considered as an acknowledgment of our ignorance, nevertheless it must be acknowledged to be better calculated to lead to true principles in physiology and pathology, than by our continuing to receive as true, a theory derived from the chemists, which is inconsistent as well with itself, as with the *known laws* of the living system.

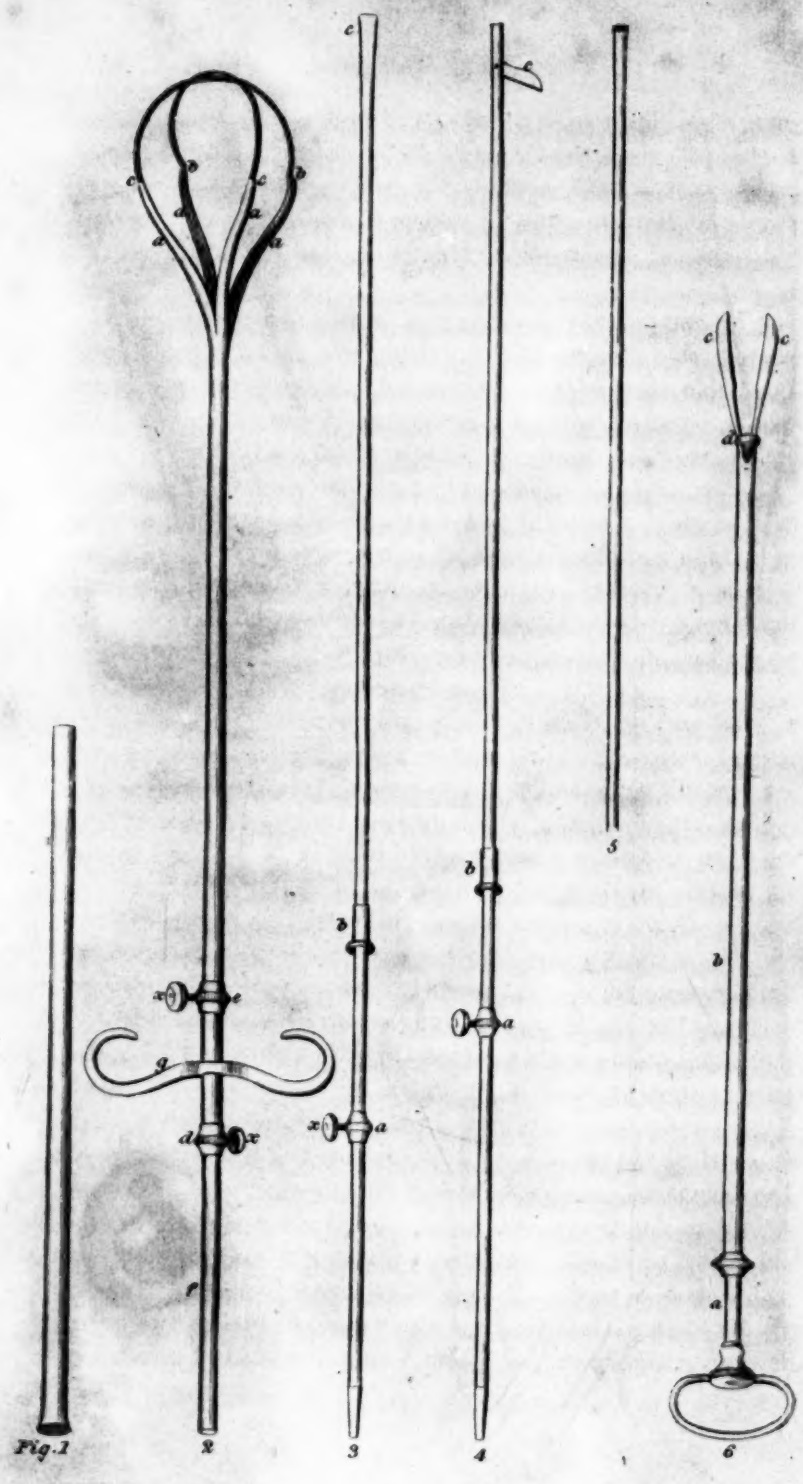
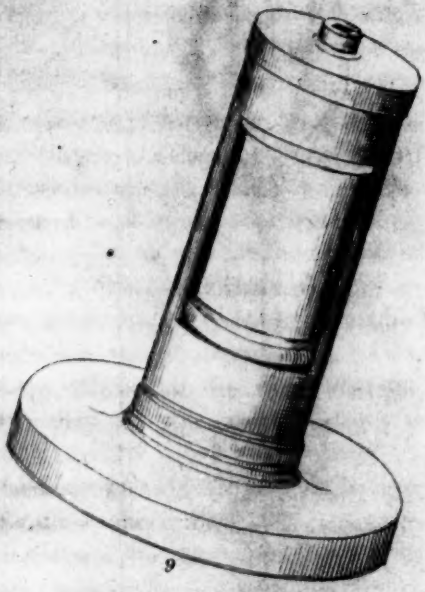
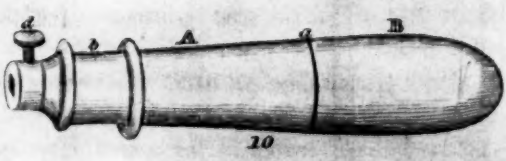


Fig. 1
2
3
4
5
6
Drawn by J. Dryton

7

8


9



10

11

12

ART. IX. *An account of* Mr. ISAIAH LUKENS's *Lithokonion.** By W. E. HORNER, M. D. *Adjunct Professor of Anatomy in the University of Pennsylvania.*

Fig. 1. Is a silver tube, called the Conductor, three and a half lines in diameter, and eleven inches long, cylindrical with the exception of its lower extremity, which is slightly funnel-shaped for the purpose of introducing into it, with increased facility the basket forceps.

Fig. 2. The Basket Forceps, being a hollow cylinder of steel nineteen inches long, and of a diameter to permit without much friction, its introduction into the silver tube.

a. a. a. a. The four prongs into which the vesical extremity of the cylinder is split; they are represented here in a state of expansion.

b. b. c. c. The Basket, formed of a watch spring split into two, at one end. *b. b.* Represents where the spring thus split is attached by a hinge-like junction, to two of the blades of the forceps. *c. c.* Represents where the two sections of the spring after being crossed, traverse small mortise holes, one at the end of each of the remaining two blades of the forceps.

The body of the Spring which with the manner of slitting it, is represented by fig. 6, is then conducted along the interior of the steel tube until it reaches the point *d.* Here its extremity is brought through a transverse hole in the steel tube, and is soldered to the brass collar *d.* This collar slides up and down upon the part *f.* of the steel tube. It is then obvious that the sliding of the collar from the handle *g.* will approximate the blades of the forceps, while the reverse will expand them. To the collar *d.* is affixed a screw *x.* which passing through it, will prevent at pleasure its sliding.

g. The Handle of the basket forceps.

e. A moveable collar, also of brass, which may be fixed at pleasure by the screw *x.* This collar acts as a valve upon the funnel end of the Conductor, and prevents the urine from flowing, particularly when assisted by a small leather ring.

Fig. 3. A Drill of steel wire.

* From λιθος, lapis, and κονια, pulvere impleo.

a. A sliding guard or collar to be fixed at pleasure by the screw *x.*

b. A sliding conical Valve to fill up the space between the drill, and the basket forceps when the drill is introduced into the latter.

c. The flat cutting, or incisor-like point of the drill.

The other end of the drill is square, in order that it may fit the drill-stock, fig. 9.

Fig. 4. A species of drill called the Rimmer of which *a.* and *b.* are as in fig. 3.; *c.* is an arm fastened near its vesical end by a pivot, and by a little agitation may be caused to project as represented, like the blade of a pocket knife half opened.

Fig. 5. A drill, the vesical end of which is like a trephine, the other parts as in fig. 3 and 4.

Fig. 6. The Duck-bill Forceps having two blades, and consisting in one tube *a.* within another, *b.* The exterior tube has the blades *c. c.* These expand by their own elasticity, but are brought together by the collar *d.* which belongs to the interior tube.

Fig. 7. The spring as mentioned.

Fig. 8. A straight sound, a foot in length, for ascertaining the position of the stone, and its distance from the extremity of the penis. It consists in a steel wire, to each end of which is attached a conoidal brass head.

a. a. Sliding collar of thread to mark the distance to which it has been introduced.

This instrument is added to the apparatus by myself.

Fig. 9. The Drill Stock.

Fig. 10. Is a drill-handle remarkably convenient as well as light. It is divided by the joint *a.* into two parts, A. and B.; of which the latter may be rested against the breast, while the other is caused to revolve by a drill-bow.

b. The place where the cord of the bow encircles the handle; *c.* a square mortise hole for holding the end of the drill; *d.* a screw for fixing the drill.

The form of this handle is such, that it may be worked either by the hand or by the bow.

Fig. 11. The basket forceps, holding a stone.

Fig. 12. An artificial calculus of gypsum, which, in the dead body, was excavated as represented; by Mr. Lukens and myself. This large excavation was effected by the rimmer, fig. 4; besides which, it is perforated in several places by the common drill.

The preceding instrument for comminuting and pulverizing, as its name implies, calculus of the bladder, has justly obtained great attention from the medical profession of this city, and is only one of the many proofs which Mr. Lukens has given of uncommon fertility in mechanical inventions, and of unusual success in their practical application. He has confided to me the care of presenting this instrument to the public, in consequence of our having performed together, several experiments on the dead subject with it. Of its easy application in the latter cases, I have the fullest assurance from repeated trials; in one of which the operation was executed before the young gentlemen constituting the clinical class at the Alms-House Infirmary. It yet remains to be determined whether on the living body, the operation is also equally applicable. If the latter be substantiated, which I have strong reason to believe will be the case, its indiscriminate use, it should be understood can not be introduced; because occasionally the bladder is too small and too irritable to permit the expansion of the forceps in it;* and also because the urethra is sometimes constricted, either naturally or morbidly, so as to forbid the introduction of the instrument through it.

The exceptions to the lithokonion from contracted and irritable bladder, &c. ought to militate no more against it, when it is indicated by more suitable circumstances, than cases of uncommon deformity in the pelvis requiring the cæsarian

* While engaged with this paper, it has happened to me to be under the necessity of performing, on an individual aged eighty-three years, the lateral operation, in consequence of the smallness of his bladder; without which I would have adopted the Lithokonion very eagerly, as the prostate was the size of a hen-egg, and there were also an inguinal hernia and a large hydrocele, the latter of them encroaching considerably on the perineum. The patient on this, the ninth day, is apparently out of danger, and there is every reasonable prospect of a perfect recovery.

section, should cause the accoucheur to abandon generally his forceps. As the pulverizing of a calculus requires time, neither should that be an objection to the operation. Many patients submit to a treatment of several months, or even years duration, for a stricture in the urethra. It is certainly then not a greater hardship to take the time required for boring out a calculus; provided the points be well proved, that the operation is a certain one; ultimately not hazardous to life; and that the pain is not more severe, than the pain which we almost daily inflict in surgical dressings and examinations. But in the deficiency of trials upon the living body, the questions of certainty, time, and pain, being undetermined, it is obviously useless to enlarge the argument upon an undetermined foundation. In addition to what is mentioned, I will only state, that Dr. PHYSICK, whose authority on a surgical point is certainly not surpassed, even if it be any where equalled; would under suitable circumstances apply Mr. Lukens's instrument; and actually had a patient under preparation for it, but was compelled ultimately to abandon the plan, in consequence of an unusual narrowing of the urethra, which would have required more time for its removal, than could be conveniently spared by the patient.

The Lithokonion has several decided advantages over the instrument invented by Mr. CIVIALE. It is not so large, and may be made even smaller than the one now described, without a loss of power; it seizes upon the stone with more celerity and certainty; when the grasp is once obtained, it will last at the pleasure of the operator without being diminished, or may be partially relaxed so as to permit the turning of the stone, and thereby the presenting of a different surface of it, to the drill or perforator; the vesical extremity of the instrument has the points of the forceps so guarded by the basket part, that there is no danger of their running through the bladder; and if the latter be unavoidably evacuated during the operation, no harm can result from permitting the forceps to retain the stone till the spasmodic attack passes away.

The rules for introducing and applying the lithokonion, which I have found most convenient in the dead subject, are as follow; they will also, probably, be suited to the living. with some trifling modifications.

1st. Ascertain that the bladder is occupied by two or three gills of urine, if not, inject any bland fluid so as to distend it, to that amount. Put the subject on his back, upon a table of the usual height; the shoulders are slightly raised; the buttocks should come to the end of the table, and the lower extremities be supported by resting the feet upon chairs, the legs being at right angles with the thighs; the latter by this position will be slightly flexed, they should also be abducted. By these several arrangements of the trunk and limbs, the muscles of the abdomen are relaxed, and the perineum softened or made less tense.

2d. The Conductor, fig. 1, is now introduced into the bladder; it is generally passed without difficulty till it reaches the triangular ligament, and here its orifice is very apt to be arrested. To obviate this, Dr. Physick suggested, and has applied successfully, a bougie of waxed linen with which he fills up the conductor, and gives to it a tapering point; when the end of the conductor reaches the bladder the bougie must be withdrawn. The means of passing a straight instrument into the bladder are simple; first direct it in a line parallel with one drawn from the under part of the symphysis pubis to the end of the coccyx, and when the instrument reaches the beginning of the membranous part of the urethra, by depressing the handle of it between the thighs, the point will be caused to take a direction nearly indicated by a line drawn from the under part of the symphysis pubis to the top of the sacrum, which carries it into the bladder.

3d. The basket forceps, (having its prongs previously approximated by the retraction and fastening of the spring collar *d.* fig. 2d,) is to be introduced through the conductor into the bladder, and the forceps expanded by advancing the spring collar up to the handle.

4th. By scooping, but especially by dabbling in the direction of the bottom of the bladder, the stone will be caught. It would be better to have some previous information of the size of the stone, so as to proportion to it the expansion of the instrument; an excess of the latter permits a small stone to fall out, before the instrument can be braced upon it.

5th. To fasten the stone; draw up the spring collar and turn its screw, then push forwards the conductor.

6th. To introduce the flat drill, apply its flat side towards the body of the spring. If there be resistance in passing it on, something is wrong, therefore withdraw and try again.

7th. The drill or trephine being pushed down to the stone, set its guard, fig. 3d, *a.* so that after going through the stone, it will stop without injuring the bladder. A little practice will familiarize one to the indication of the stone being pierced through. The rimmer is then to be introduced, and the stone excavated. If the arm of the rimmer be too long for the size of the stone, it will strike against the basket and break it, which should be avoided.

It is better to set the guard of the drill by small successive graduations; this rule is indispensable to the action of the rimmer.

The stone being thus treated in one diameter, may be turned by a long wire, slightly curved at the point, carried down to it, the grasp of the forceps being previously somewhat relaxed. The boring process is then to be repeated upon the presenting part of the stone, and so on successively till the latter is pulverized and comminuted into small pieces.

The powder may be removed by the natural discharge of urine, and by injection, but the fragments must be brought off with the duck-bill forceps through the conductor.* Should any of the fragments be too large for this process, they may be reduced by a small flat-pointed drill, (with an ivory handle,) adapted to the duck-bill forceps.

To withdraw the Instrument.

1st. Retract the conductor; loosen the spring collar and advance it towards the handle; introduce a wire and dislodge the stone by a steady push, if it be not comminuted.

* It will be remembered that Sir Astley Cooper and some others of the English Surgeons, have withdrawn gravel from the bladder on several occasions; the instrument they used is not so good as the duck-bill forceps of Mr. Lukens. My personal observations on this point are defective, but are thus satisfactorily supplied.

2d. Retract the spring collar to its utmost, and fix it; push the conductor a little way into the bladder, and then draw the blades of the forceps within it. The urethra being thus protected, the whole apparatus may be withdrawn at once.

If much urine has escaped during the previous process, the bladder must be distended artificially before the basket forceps is removed.

CASES.

ART. X. *Case of a child with two Uvulæ.* Communicated by PHILIP TIDYMAN, M. D. in a letter to PROFESSOR CHAPMAN.

IN April last I was called by my plantation nurse to visit a black female child of five years old, whom I found with much fever. I soon discovered this to be a worm case, and after resorting to the usual treatment, she recovered in the course of fifteen days. During that time nearly thirty lumbrice, (according to the report of the nurse,) were expelled. The principal remedies made use of were calomel, and the turpentine mixed in castor oil. From the peculiarity of voice of the child, and manner of swallowing, I suspected the throat was ulcerated, but was informed by the grandmother, who was allowed to attend her, that she was born with a palate differently formed from that of any child she had ever seen; and she must have had frequent opportunities of observing, having acted as midwife for more than thirty years on that plantation and the vicinity. On inspecting the mouth and throat, there was not the slightest appearance of inflammation or ulceration, but a healthy, well-formed palate, from which projects two uvulas; they are about half an inch apart, one a little longer than the other, perfectly detached. The deglutition is slightly affected; in drinking *hastily*, the liquid will sometimes pass through the nares. The voice conveys a strong nasal sound. The child from her birth has always been in delicate health. The parents are likely and healthy negroes, and have two other children who are strong and healthy, with no unnatural appearance about their palates. Nature is often very capricious in the extraordinary display she makes both in the animal and vegetable world. With regard to this singular *lusus naturæ*, in the instance of this little negro, I do not remember ever to have seen or heard of a similar one.

ART. XI. *An extraordinary Case in which clots of Blood oozed from the face of a Girl.* Communicated to Dr. CHAPMAN.

SIR,

In the sixteenth number of your Journal you express a wish to have an authentic account of the extraordinary case of a girl in this neighbourhood, thirteen years old, "from whose face and under the eye clots of blood would occasionally ooze."

As the case fell under my observation, I have presumed to give you the following facts.

The accounts of the case by General EAVANS, Dr. SHULER, and Drs. SMITH and CASEY, some time ago in the Indiana papers, are correct and without exaggeration, as can be testified by a hundred people.

The girl is small of her age, but well made, of a good disposition, and of a poor but honest and industrious family. In the spring and summer of 1823, a little blood would occasionally appear about her eye and face, which neither excited alarm nor curiosity. In the November following, however, the quantity became suddenly very large. The family in which she lived think a pound was found some mornings about her face and pillow in clots. When this oozing of blood had continued about five days, a physician being called in applied, without knowing for what reason, a plaster to the place from whence the hæmorrhage came. But the blood soon pushed it off. About this time, fimbriated substances, resembling moss or spiders, and pieces of bone were discovered among the clots. Henceforward things changed.

Generally a single clot of blood would appear first in the morning, and be followed by lumps of fleshy substance and pieces of bone alternately all day. The bones were of every size under the weight of two drachms, of various and irregular shapes, generally having one or two smooth sides without any periosteum, while the other sides appeared much like fractured surfaces. They continued to come for about six weeks with an intermission of three or four days. At first they came as often as once in every ten or fifteen minutes, and

were very hard. At last they came much more seldom, and gradually assumed a cartilaginous appearance. They generally adhered to the cheek slightly, by a kind of glutinous substance, till pulled off. Their first appearance was astonishing. While the by-standers would be gazing at the place from whence they came, they would be suddenly surprised with their appearance without being able to tell how they came, for the girl would feel no pain, and not the least sign of an opening or a scratch could ever be discovered. All agreed in thinking they must come through the skin.

The lumps of flesh that alternated with the bones, were about the size of the end of a finger, and had much the appearance of the soft kind of polypus.

All these things appeared about the left eye, and mostly upon the cheek under the eye. Two pieces of cartilage made their appearance between the eyelid and eye. The last of all that appeared, was a cartilage nearly as large as the nose, which came through the left nostril, causing in its passage considerable irritation.

During this extraordinary case, I visited the girl several times, and once in company with several other physicians. Not the least sign of swelling, discolouration, soreness, or anything else indicating disease could ever be discovered about the girl, except she acknowledged that she had occasionally a slight pain about her hips and loins.

I have been told, that soon after the last cartilage made its appearance, she commenced menstruating regularly, and nothing strange has ever appeared about her since. During the time the bones were coming, the girl was subject to eructating, after eating, a kind of gas of a very strong smell, which the family compared to that of whiskey.

Any further information relative to this case, will be given with pleasure, if wished for.

CHARLES FULLERTON.

To Professor Chapman.

ART. XII. *Scirrhus Tumour of the Uterus.* Communicated by Dr. JOSEPH C. SKINNER, of Edenton, North Carolina, through Dr. DARRACH.

JENNY, a negro slave, aged thirty-eight years, living near Edenton, North Carolina, was the subject of the following case. Three years back, she began to complain of an uneasy sensation, painful occasionally, in the lower part of the abdomen. Menstruation became disordered, dysmenorrhœa at one time, menorrhagia at another, and suppression, not unfrequently for two and three months. About one year these systoms continued mild; and then became gradually more aggravated and serious; what was a mere uneasiness became a fixed pain; the patient could now feel in the uterus a twitching, and sometimes a gnawing sensation. Menstruation became now altogether diseased. The general health of the individual began to suffer; her countenance indicating extreme suffering, and every thing about her system exhibiting signs of a speedy and fatal issue. A careful examination was made per vagina, but no scirrhus state of the cervex uteri could be detected; yet a large tumour in the abdomen could be distinctly felt by examining externally.

A year expired without any other alteration in the case than increased size of the tumour, emaciation of her system, and the other symptoms more distressing. The first of August last, the patient imagined herself much better, and entertained hopes of recovery; natural menstruation reappeared, after an intermission of two years: the uterus ceased to be painful, the swelling lessened, and the health improved.

The patient continued in this flattering state of alleviation, until March, when all the former symptoms returned with increased severity; the menstruation now entirely suppressed.

Called upon to renew my attendance, I found her altogether helpless, and almost constantly confined to her bed. For the first time she imagined herself pregnant, which, by examination, was proved to be the fact; the os uteri was a little opened, giving the same sensation to the finger that is

felt in ordinary cases of utero gestation, and on the right side a fœtus could be distinctly felt.

On the first of May she was attacked with labour pains, followed soon by a rupture of the membrane. After the waters were discharged, instead of the presentation of the fœtus a large quantity of coagulated blood followed. The cause of this was clearly ascertained to be, a separation of a portion of the placenta which was attached to the right side of the os uteri. The os uteri was not sufficiently opened to permit the passage of the head, as is demonstrated by the dissection, could never have been sufficiently so. The patient continued in this state three days, when pain and flooding entirely ceased, and nothing was felt but the sensation of gnawing in the uterus. On the thirteenth of May she was again attacked with pain and nausea, vomiting, and diarrhœa, which terminated her life on the eighteenth.

Dissection.—After removing the integuments of the abdomen, the anterior surface of a large tumour was exposed to view, extending from the pit of the stomach into the pelvis, and filling up the abdominal cavity on all sides. By viewing it laterally, a portion of the right side of the uterus could be seen, but nothing of it on the left, in consequence of the inclination of the tumour to that side. This large tumour was attached to the uterus a little to the left side, by, comparatively, a small base, about midway from the cervix to the fundus. Its form nearly resembled that of the uterus. Its surface was very uneven; covered with small tumours from the size of a nutmeg to a small pea. These small bodies were found to consist of a firm cartilaginous substance, in the centre of which was a cavity containing a small quantity of sanious fluid. The tumour was next opened from the fundus to the cervix. After cutting through the parietes, which were about two inches thick, and of a very firm cartilaginous substance, a large cavity was exposed which contained a considerable quantity of sanious fluid. This cavity presented an appearance nearly resembling the internal structure of the left ventricle of the heart. Numerous cords passed off

from one side, commencing about the size of a crow's quill, and terminating in a small thread which was attached to the opposite side. In this cavity were also a number of hydatids, attached to its sides, containing a fluid resembling that in the large cavity. The base of this tumour, which was four inches in circumference, an inch long, and an inch and three quarters in diameter, seemed to grow out of the substance of the uterus, rather than attached to it. It was found to consist of a hard cartilaginous substance, differing in no respect from the parietes of the tumour.

The form of this tumour, as I have already stated, nearly resembled that of the uterus. It was pyriform, very large at the fundus or upper portion, and gradually tapering to a point.

From the upper to the lower extremity, this tumour measured - - - - - -	14¼	inches.
From the upper portion to its attachment to the uterus - - - - - - - -	8½	do.
From the apex to its attachment to the uterus	5½	do.
The circumference at its fundus -	2 feet 6	do.
The circumference at the base or attachment	1 foot 9	do.
The circumference at the lower extremity or apex - - - - - - - - .	2½	do.
The largest diameter - - - - - -	18	do.
Diameter at the apex - - - - -	⅔	do.

The upper portion of this tumour ascended as high as the diaphragm, and the lower portion pressed firmly on the neck of the womb, so that it was impossible for the os tincæ to be opened sufficiently to allow the head of the fœtus to escape.

The uterus was not at all removed from its natural situation, neither was it altered in shape. The fundus was about two inches above the umbilicus. The external surface of this organ presented nothing unnatural, except at its fundus; at this part there were several small tumours, resembling in size and character those described on the external surface of the large tumour. On opening the uterus, a fœtus was exposed, perfectly developed and full grown. Nothing remarkable was observed in the parietes of the uterus, except at the place

where the tumour was attached; this presented all the appearances of the parietes of the tumour. The ovaries were perfectly healthy, and no appearance of disease could be observed in any other of the abdominal viscera.

On the right iliac region was attached a hydatid, about the size of the gall bladder when distended.

ART. XIII. *A case of Labour with Carcinomatous Os Uteri.* By JOHN T. SHARPLESS, M. D. *Philadelphia.*

I WAS called in January, 1825, to see Mrs. A. aged thirty-six years, living in Powel street. I found her in the seventh month of pregnancy, extremely emaciated, some fever and great debility. She informed me she had carried her former children comfortably, that her previous confinements had been easy and rapid, and that she had continued perfectly healthy from her present conception to the fifth month, (November,) when she flooded severely without apparent cause, and had suffered since from great and continued pain in the back and pelvis. Bleeding occasionally occurred from that time, sometimes to the extent of a quart. In December, a profuse, fœtid discharge presented, attended by an inability to retain her urine, which passed at all times without her knowing by what channel. This urine was dark and offensive, and deposited a black, flocculent sediment.

She continued becoming more debilitated till she was confined to her chamber, and at length to her bed; the discharge of ichor from the vagina excoriating all the neighbouring parts, and so fœtid as to make her room intolerable. Gestation however progressed, the motions of the child becoming extremely painful whenever it struck the parts within the pelvis, till the close of the ninth month; she was taken in labour the evening of the fifteenth of March.

Upon examination, such a collection of diseased masses presented, that I concluded at first that I had hands, feet, and

umbilical cord together. They soon proved to be large lobulated tumours, extending from the os uteri and exceedingly tender to the touch.

The orifice was dilated to about two inches in diameter, and at least one inch in thickness. The pains were regular and strong, but after continuing several hours without bringing the child within feeling, tr. opii. was given, and as slight febrile action existed, some blood was taken. The pains however, continued violent, and in the morning the head was hard against the os tincæ without producing any disposition to yield in thickness or contraction. Twenty-five ounces of blood were now taken rapidly, and the patient held as perpendicular as possible to produce fainting, but no sensible effect was perceivable, either on the pulse, genitals, or pains. The violent contractions continued all day, and by evening the head had advanced about an inch, pushing the impenetrably corded mouth before it. In the evening, as the system seemed relieved of the depression produced soon after the detraction of blood in the morning, a vein was again opened, and ten ounces brought down the pulse, without affecting the os uteri. She continued in this distressing state all night, her strength and spirits supported, but suffering the most violent pains conceivable. In the morning, as reaction had again accrued, and as rupture of the uterus was dreaded, venesection was again resorted to; but a few spoonfuls reduced the pulse as low as allowable. Still there seemed no necessity of recourse to more active manual treatment. The strength was yet good, and the head perfectly moveable and gradually advancing, but without affecting in the least imaginable degree the contraction of the barrier whose rigidity seemed unconquerable.

Towards midnight the anxiety of the family induced a consultation with Dr. H. Neill, who I was happy to find coincided with me in the conclusion, that time alone would resolve the difficulty, and that nature and patience was our best resource. Warm, wet cloths were continued to the parts, and about four o'clock next morning the greatly lengthened head appeared, slowly sliding through the constriction which

was almost pushed to the os externum. The shoulders faltered for a time, but passed, and a large dead fœtus was soon expelled. Tonic contractions did not come on till the hand was in the act of separating the placenta from the fundus. The membranes were thickened, rough, and dark, for several inches around the point ruptured for the passage of the child, and the rest healthy. As the motions of the fœtus had been felt during labour, it could have been dead but a short time, being of large full size.

For the two days following the birth, our patient passed along without an untoward symptom, her strength and pulse were supported admirably, and nearly every thing predicted recovery. The uterus continued large, and a watery, fœtid discharge took the place of the lochia. On the third day a heavy eye and weakened pulse presented, but no pain or tenderness about the system. The prostration increased, and notwithstanding all our efforts, death took place in the evening.

On examination after death, the uterus was found large and thick, and its cavity the size of a pint. In the os uteri there seemed an actual disappearance of the whole substance of the neck, and three ragged processes of two inches in length and breadth, and one inch in thickness occupied its place and filled up the vagina. These were black and ulcerated, extending over their whole surface and into the cavity of the uterus for an inch and a half, and along the vagina around its connexion with these tumours, where the ulceration had left long ragged filaments passing from one part to another. Behind the pubis, and on the course of the urethra, was an enlargement the size of a walnut, with its surface perfectly rough and purulent, and completely stopping up the vagina, whilst the rest of the vestibulum had lost its natural appearance, and was entirely covered to the os externum with granulated masses of a light colour and the size of filberts.

Behind this tumour on the urethra, was an ulcerated opening admitting the thumb into the bladder. This passage was surrounded both in the vagina and bladder by a collection of

these singular excrescences, forming a ledge around the opening of half an inch in height.

Upon the examination of this greatly diseased structure by Dr. James, who had been interested in the case from its commencement, he immediately expressed his astonishment that a morbid process of so decidedly cancerous a character could have existed for four months, making such great changes in all the neighbouring parts, and actual destruction of some, without interfering in the least degree with the progress of gestation. Such an instance he had never before met with, and kindly requested an account might be given to the world, considering its uncommon character deserving of publicity.

Here, indeed, was illustrated a power in the uterus to carry on its functions, not often met with. That there was an actual loss of the natural substance of the cervix of the uterus, there could be no doubt, for the processes occupying its place were of a character entirely unnatural and secondary: neither were they affected by the pressure of the head, but hung loose and flaccid in the vagina, whilst the thickened and corded circle that connected their bases was most rigid. As this orifice on first examination was found near two inches in width, and more than one inch in thickness at the very edge, and the fœtus entirely out of reach, it must have been in this situation for some time, perhaps for weeks. The membranes must also have been separated from the uterine surface several inches in diameter, as the ulceration extended into the cavity of that viscus a considerable distance, and I supposed the unhealthy appearance and thickened condition of the membranes to have arisen from the contact of a diseased surface and acrid discharge.

That this was the carcinomatous, and not the corroding ulcer of Clarke and Baillou, the actual deposit of new matter will decide, and although the disease had destroyed some of the texture, infinitely more had been produced.

The preparation has been well preserved by Dr. Horner, and is placed in the Wistar Museum of this city.

ART. XIV. *Case of Congenital Inguinal Hernia.* By CASPAR MORRIS, Resident Surgeon of the Pennsylvania Hospital.

ISAAC SIMS, aged 30, was admitted as a patient into the Pennsylvania Hospital, September 2d, 1824, where he came under my immediate care, under the superintendance of Dr. JOHN RHEA BARTON.

In the early part of August, he had been attacked by symptoms, supposed by a country practitioner to indicate colic, for the relief of which the remedies usual in such cases were resorted to, but without benefit. In about 48 hours the pain suddenly ceased; shortly after which, he directed the attention of his physician to a blackness of the scrotum and groin of the right side, then first informing him that he had congenital inguinal hernia. In a few days the parts sloughed, and granulation and cicatrization took place, with the exception of a sinus, which was formed opening rather below the ordinary situation of the external abdominal ring. From this sinus was discharged every time he changed his position, but more particularly on rising, a considerable quantity of matter, resembling both in smell and appearance the contents of the stomach of an animal killed at the close of the digestive process; flatus also occasionally escaped. He had at the time of his admission an obstinate diarrhœa, hectic fever, and night sweats. His appetite was enormous, notwithstanding which he was extremely emaciated and enfeebled. A probe introduced could be passed no further than about the position of the internal ring. By the administration of tonics and a nourishing diet his strength was much increased, and on the 15th of October, it was concluded to trace up the sinus, with a view to ascertain the practicability of affording him relief. It was accordingly laid open to the internal ring, whence a probe might be carried a considerable distance, but evidently not into an intestine, as the calibre of the passage was very confined.

Dressings were applied, and the patient, who was very much exhausted, was placed in bed. Shortly after he evacuated from his bowels a quantity of greenish fluid, of very of-

fensive odour, in which floated an abundance of yellow flocculi; during the evacuation the same matter was discharged from his wound, thus demonstrating that in some way a connection existed between the sinus and intestine. From this time he rapidly sunk under the debilitating effect of very frequent discharges, of the same character as that noted above, till the 30th of October, when he died.

On examination of his body, universal adhesions were found between the different portions of peritoneum, and a probe introduced through the external opening of the sinus was found to pass between two barrels of the small intestines across the abdomen to the left side, where an adhesion was formed between a part of the upper portion of the small intestines and the peritoneum, covering the costa of the ilium, just above the linea-ilio-pectinea. By this the whole affair was explained; a small portion of the side of one of the small intestines had been strictured, mortification took place, and nature, after having caused the separation of the dead from the living part, had retracted the latter, and endeavoured to complete the calibre of the intestine by this adhesion. But unfortunately before this could be effected fæces had been effused, which excited peritoneal inflammation. To get rid of the extraneous body the above described sinus was formed between the two barrels of intestine, and thus established a drain by which the chyme was discharged before sufficient nutriment could be taken up by the lacteals to supply the demands of the system.

My object in detailing this case is to afford practical illustration of a valuable precept, viz. in all cases of very violent or long-continued pains, resembling those of colic, suspect strangulated hernia. No harm can arise from making the examination, and had it been done in this case, probably the life of the father of a large family, dependant on him for support, might have been saved.

QUARTERLY PERISCOPE.

EUROPEAN INTELLIGENCE.

PATHOLOGY.

M. Villerme *on Inflammation.*—We present our readers with the following table of the organic changes resulting from inflammation, as drawn up by M. Villermé:—

"1. *Lesions, or immediate alterations.*—Unusual accumulation of blood in the minute vessels—redness and tumefaction of the inflamed parts—greater consistence of those which are soft.

"2. *Lesions, or organic changes, which are terminations of inflammation.*—Augmentation of volume—hardening—hepatization—dropsy—serous infiltration—opacity of tissues which are naturally transparent—suppuration—false membranes—purulent infiltration—purulent drains—abscess—deposition by congestion—vesication—softening—fleshy excrescences—narrowing and obstructing of vessels and canals—adhesions, 1st, between surfaces naturally free, (serous and mucous,)—obliteration of serous cavities, bridles or bands traversing them—obstructions—2d, adhesion between accidental surfaces—cicatrization by the first intention, cicatrization by the second intention, with or without destruction of parts, (false membranes.) Erosion, or ulceration—perforation—gangrene—hospital gangrene—scirrhus—fungus hæmatodes—some other morbid structures not yet well understood. Cancer—tubercles, 1st, scrofulous; 2d, of serous membranes. Accidental tissues, having something analogous in the economy, cartilaginous and cartilaginiform, osseous and ossiform—fibrous and resembling fibrous, (false joints)—mucous (membrane of fistulous openings)—der-

moid, serous, (cysts)—cellular—particular monstrosities—congenital occlusions, &c. Sanguiferous vessels of new formation or creation—organization of the fibrin of the blood, of pus, of false membranes, &c. and conversion into laminated, serous, &c. structures—accidental organs, apoplectic cysts, &c. membranous canals of fistulæ—synovial capsules of false articulations.

"3. *Changes which are the remote consequences of inflammation, and which are not effected until this has already ceased.*—Return of parts to their natural state: restoration of obliterated cavities—restoration of the obliterated medullary cavity of a bone—reproduction of the marrow and medullary organ—return of canals and vessels to their ordinary dimensions—reproduction of fat.

"It is sufficient, (adds M. Villermé,) when we have a tolerably profound knowledge of pathology, to glance at this table, in order to perceive how numerous and varied are the organic changes of structure which constitute the subject of this article. It will be at once recognized that there are some so intimately allied to inflammation, that we cannot imagine this to exist without them—other accompany inflammations, marking their intensity, their duration, specific character, their scite and particular tendency, &c. while others are not to be found until the inflammatory action has passed away. The first are the inflammation itself—the second mark, by their formation, the actual existence of the inflammation—and the third show that it has ceased." *Journal Générale de Médecine.*

M. Scoutetten's *Case of Hypertrophia of the Brain.*—"Peisset, a child, five and a half years old, born of healthy and sound parents, exhibited an extremely large head, equalling in size that of a strong healthy adult; the development of which had proceeded so imperceptibly, as not to furnish his parents with any idea as to the time it first began to enlarge. The forehead was elevated, but not prominent: the protuberances on the os occipitis had attained a very large size. For some time, this boy did not complain of any pain; he was not constrained to keep quiet by any other cause than the weight of his head, and when he wished to walk or run, he suddenly threw himself for-

wards, and then generally fell. These inconveniences, however, did not seem to increase; and during the last year, he frequently presented himself at the Military Hospital of Metz. There was nothing remarkable in his intellect; he understood and remembered very well what was said to him, but he did not recollect any occurrence of his previous life. When he sat down and remained quiet, he frequently fell asleep, but otherwise he had no remarkable heaviness. All the functions of young Peisset were executed naturally; and, without any cause appearing to give rise to it, suddenly they observed, in the beginning of September, 1823, his appetite fail, at the same time that he was thirsty, and had a sort of flying pain in the epigastric region. The belly still remained soft; his pulse was hard, full, and frequent; but still they did not perceive any alteration in the functions of the brain, or in the head, although there was certainly a degree of heaviness, from which he was directly roused on speaking to him. His stools were abundant, favoured by the exhibition of castor oil twice, and by emollient enemas. These means caused the evacuation of several large worms, but in other respects he was not much relieved. During fifteen days, the morbid phenomena did not experience any material change. On the sixteenth, the patient was suddenly, (and for which no cause could be assigned,) seized with an aggravation of his symptoms. The functions of the brain became entirely abolished; the pupil was dilated, although the iris still retained the power of contraction in a high degree; his respiration was embarrassed; his pulse flagged and became soft; and about four o'clock in the afternoon, he expired."

"*Dissection.*—External appearances: Head extremely large, and very much resembling that of an adult of large stature; the posterior part very greatly developed; the eyes sunk in the orbits; the belly slightly enlarged; the inferior extremities rather small and thin. The skull was from a line and a half to two lines in thickness; the places where the sutures are situated did not appear thinner than the other parts; the meninges of the brain adhered very closely to the skull, and required rather powerful efforts to detach them. M. Scoutetten did not remark any alteration in the structure, but the vessels were distended with blood; the membrane was extremely red all over, and

showed in many points very distinct exudations of blood; as also many white patches, formed by the thickening of the parts. The plexus choroides was at the same time highly injected. The brain was greatly enlarged, and exhibited throughout its structure much greater density than is generally met with in persons five years of age; its structure was of a reddish colour, but did not show any signs of morbid alteration. The enormous development of the brain seems to have taken place chiefly on the upper parts and sides of the hemispheres. He now made a perpendicular incision into the ventricles, of the depth of three inches, leaving only about an inch of the base undivided. The cavity of the ventricles contained only a very small quantity of reddish serum." *Archives Généralés de Médicine, Janvier.*

M. ANDRAL'S *Case of Inflammation of the Thoracic Canal.*—"The annals of science possess but few observations respecting the organic alterations of the thoracic canal, and of the vessels which terminate in it. These alterations are, however, very rare. I have dissected with care the thoracic canal in more than three hundred bodies, and I have only found it five times in a state of disease:—in two cases its parietes were the seat of an obvious state of inflammation; in a third case it was obliterated; in a fourth it was cancerous; and, finally, its parietes were, in the fifth case, sound; but a foreign, solid, and apparently a tuberculous matter filled its cavity. The rare occurrence of such cases induces me to publish them: they furnish some materials to the history of diseases of the lymphatic system, diseases respecting which we possess as yet so few positive ideas."

"A female, forty-seven years of age, who was afflicted by chronic nephritis, died in the hospital *La Charité* during the course of the year 1824. This female had arrived, by degrees, at the last stage of marasmus, and hectic fever had consumed her. She had also presented all the symptoms characterising nephritis. The right kidney was found changed into a number of cysts filled with pus: behind it existed a vast purulent collection, which extended as far as the iliac fossa. Instead of finding the thoracic canal empty, or filled with a little transparent serosity, such as is generally found, I discovered, between the descending pectoral aorta and the vena azygos, a white chord,

of the size of a writing pen. A more attentive dissection soon discovered to me that this chord was the thoracic canal distended by purulent matter. It was thus filled from where it passed through the diaphragm to a little before it opened into the subclavian vein. In the whole of this extent, the internal surface of the vessel presented a red colour, the intensity of which was not the same throughout. In one part a number of vessels were seen agglomerated and considerably injected; and in another part the redness was uniform, and similar to what is frequently observed on the internal surface of the arteries, but it seemed not to result from vascular injection; one might say that the internal surface of the canal, at these parts, was as if painted red. This colour resided entirely in the internal membrane, which was considerably thickened, and which could be separated from the external tunic much more easily than in a state of health. The rest of the lymphatic system presented nothing particular.

"In this case were found united the most decided appearances of inflammation, viz. redness of the textures, their thickening, and lastly, pus. But a difficulty may be here started—it may be said that the pus was not formed in the thoracic canal, but was carried there by absorption, and that it was in consequence of its contact with the internal surface of the canal that this latter was inflamed. In whatever manner the fact may be explained, it was not the less certain that there existed inflammation of this duct, either primitive or secondary.

"I had occasion to see another case of inflammation of the thoracic duct, at the Hospital for Children, in a boy, eleven years of age, who had been under the care of Dr. Guersent, and who died of croup, complicated with pleuro-pneumony and gastritis, in the course of June, 1823. The parietes of the thoracic canal appeared to me much thicker than natural, and also much more friable. The cavity of the canal contained but a small quantity of transparent serosity; but its internal surface was, in its whole extent, of a lively red colour. Observed between the eye and the light, this redness seemed to arise from a minute vascular injection. A number of tumefied and reddened glands, with tubercular points in the centre of each, were developed along the whole course of the thoracic duct: a still greater number was found in the abdomen, around the enlargement in which the duct commences.

"This case differs from the first, in the circumstance that no pus was observed in the canal. The existence of inflammation was, however, proved, not only by the redness, but also by the change as respects thickness and consistence, which the parietes of the canal had undergone. It should also be remarked, as a circumstance not observed in the first case, that inflammatory enlargement of the adjoining lymphatic glands was present in this case, along with inflammation of the canal." *Anderson's Quarterly Journal, April.*

---

*Peculiar Spasms in Children.** The disease to which Mr. North's attention has been drawn, nearly resembles that described by the late Dr. John Clarke, in the fourth chapter of his Commentaries. But it was long ago alluded to by Underwood, and, ten years ago, minutely described by Dr. Kellie, in the 12th volume of the Ed. Med. Journal. In the year 1817, Dr. Johnson published a short paper on the disease, (which he denominated "carpopedal spasm,") in the 3d volume of the monthly Med. Chir. Journal. Some of these sources of information Mr. North has overlooked. The affection is thus described by the acute observer last mentioned.

"The premonitory symptoms occur at an uncertain age—generally, I believe, between the third and seventh month. At first, they may not be sufficiently striking to attract the particular attention of the friends, although the practitioner, who has had opportunities of watching the progress of similar cases, might, with much confidence, predict the series of symptoms which is yet to be developed. Each time the child wakes from its sleep, the breathing is for some moments unusually accelerated, and is accompanied by such a kind of noise as would be caused by an increased secretion of the mucus of the aerial passages. If the little patient has previously enjoyed a good state of health, the characteristic rotundity of features observable in the infantile state, will quickly undergo a remarkable change. The countenance soon becomes anxious; the sides of the nose are drawn in; the face is pallid and emaciated. When put to the breast, the child sucks greedily for a moment, but suddenly ceases to do so, and frequently throws back the head, which remains rigidly extended for some time. Whatever may have

* Mr. John North. London Med. Journal, January, 1825.

been the previous condition of the bowels, they now become constipated.

"This state may continue for a very uncertain time, without any remarkable alteration: the following symptoms, however, are gradually added to those above enumerated; they occur irregularly. A convulsive affection of the hand is usually the next morbid sign which excites attention. The child's thumb will be found constantly and firmly pressed upon the palm of the hand. The wrist and ancle joints are bent rigidly inwards. The head is now almost constantly thrown backwards, keeping the anterior muscles of the neck upon the stretch. The inconvenience the child suffers, when he wakes, is no longer confined to a mere acceleration of the breathing. This symptom still continues in an aggravated degree, but the noise accompanying the respiration has gradually assumed a very different character from that which marked it at first: each respiration is now attended by a loud crouping noise, which might be heard in an adjoining apartment. The child has frequent attacks of convulsions, during which the features are much distorted. These convulsive paroxysms vary in violence and in duration in different cases; sometimes the whole body is affected. In the child of a Mons. Lambert, in whom the convulsions were frequent and severe, the state of opisthotonos was so complete, that for many days the head and heels were the only parts which touched the bed: if, with difficulty, this apparently painful position was altered by the mother, it was quickly resumed. The brow of the child is generally knit. The anxiety of the countenance is extreme. There is no febrile action in the system to be detected. No determination of blood to the head is manifested, either by an increase of heat or a flushed countenance.

"I have known the firm contraction of the thumb, the rigidly bent position of the hand and foot, and the crouping noise in respiration, continue for many weeks without intermission. The child sometimes appears lively: its countenance will be animated by a momentary cheerfulness; but it almost invariably awakens from its slumbers, however tranquil they may be apparently, with a convulsive paroxysm, similar to that which I have described. The paroxysm having terminated, the child appears much exhausted, and almost motionless for some time. Dr. Clarke observes, that the term of chronic croup has been some-

times applied to this affection; 'but it is very different from croup, and is altogether of a convulsive character.'" 40.

Dr. Kellie's description of this curious disease is worth stating in this place, because the pathology of the complaint has given rise to considerable discrepancy of opinion, and the disease itself does not appear to be known to the generality of practitioners.

"But in many cases this remarkable tumour of the hands and feet has appeared to me to constitute but a part of a disease of a somewhat more serious and striking nature. Even the swelling itself deserves a more particular description than has been bestowed upon it by Dr. Underwood.

"It has a considerable degree of roundness and elevation, and looks like that sort of tumour which might arise on the same parts from a blow or contusion. It seems to arise suddenly, as it has generally this roundness and elevation from the time of its first attracting observation. When first observed, it has somewhat of a mottled, livid, and purplish colour; I would say it looks cold-like, or that it resembles the chilled hand of a full and healthy child after exposure to a cold and frosty atmosphere. It feels cold also, at least it has no inflammatory heat, and does not appear to be morbidly sensible, or to give any pain to the child when handled. It does not pit on pressure, but rather gives the sensation of firmness and resistance; and when pinched, and attempted to be moved sideways, it has always conveyed to me the notion of a disease of infants, which is known by the name of Skin-bound.

"This swelling, which is confined to the anconal aspect of the metacarpus of the hand, and to the rotular aspect of the metatarsus of the foot, terminates abruptly at the carpus and tarsus, insomuch, indeed, that in lusty children, it seems in these places as if confined by a cord or bandage. I have known this tumour to continue for weeks together. Sometimes it disappears in a few days, not again to return. In other instances, it has from time to time disappeared, and reappeared at short intervals. When it continues without abatement for any length of time, for a week or two, it sometimes softens, becomes looser and more compressible; its colour changes to paler, and acquires more of a leucophlegmatic hue; in a few cases it has become truly leucophlegmatic, and the œdema has spread upwards on

the legs and thighs. But this is a very rare occurrence, of which I have seen but one or two examples. Its more sudden disappearance, without undergoing these changes, or without passing to the state of leucophlegmasia, is by far more common. But this swelling of the tops of the hands and feet is, according to my observation, connected, in a great proportion of cases, with another appearance of a more formidable nature, a spastic contraction of the flexor muscles of the thumbs in the upper, and of the toes in the lower extremities. The thumb is rigidly contracted, and permanently bent downwards, and laid flat upon the palm of the hand; and, in like manner, the toes are bent down to the plantar aspect of the foot. Along with the thumb, the carpus also is, in some cases, drawn thenard by a spastic contraction of its flexors, which much increases in appearance the prominence and sphericity of the metacarpal tumour. The child labouring under this state of disease is unhappy and restless, but does not appear to suffer much, if any, pain, in the parts affected, unless an attempt be made to force them from their situation; and even this forcing of the thumb or toes from their unnatural position, does not always make the child cry. Though peevish, fretful, and evidently suffering from irritation, he cannot be said to labour under pyrexia at all times. In some cases, indeed, the pulse is more frequent than in health, and towards evening there is an increase of heat, and perhaps flushing of one or both cheeks, with coldness of the feet. The bowels are commonly torpid, and the stools obtained by laxatives are, as Dr. Underwood has described them, fetid and clayey, or green, sour, and slimy. This spasmodic affection, though on some days it may appear more relaxed than on others, is, upon the whole, wonderfully persistent. I have known it continue, with little abatement, for many weeks. In others, it has yielded within a shorter period, in a few days, in a week, or a fortnight. In one child, who at length died of supervening marasmus, the constracted state of the thumbs continued, with little occasional relaxations, for three months. The greater number of cases which I have seen have terminated favourably. I have sometimes known eclampsia to supervene to this tonic spasm of the thumbs and toes. One child had repeated fits of convulsion on three successive days, and eventually recovered. Two others have died after supervening eclampsia. In another case of this disease, in which the thumbs and toes had been contracted for

three or four weeks, fever supervened, and the child died after passing through all the symptoms of hydrencephalus acutus. Two other children, affected with the disease in question, have tardily sunk under that train of symptoms which Dr. Armstrong distinguished as the hectic of teething. These are the only instances I have met with, in which this disease has had a fatal termination; and that termination, it may be observed, has been by a sort of conversion or gradation, by the supervention of eclampsia, hydrencephalus, or abdominal fever." 450.

In all the cases, the age was between six months and two years—consequently within the period of dentition. Dr. K. therefore looks upon dentition as the chief, though probably not the only cause of the disease in question.

Dr. Johnson, in the volume before cited, has related a case, which appears to have been an exquisitely marked one of this peculiar affection—and, as it is short, we shall cite it.

"The patient was a delicate female child, nineteen months old, and cutting three or four teeth at the time. She had been ill eight days before the Reporter saw her; but according to the mother's account, there was little or no variation in the symptoms all the time. When first seen, the child three or four times in the hour, was seized with spasmodic affections of the respiratory muscles, consisting of repeated attempts to fill the chest, during which she threw herself back, as in opisthotonos, and appeared as though she would be suffocated. These fits would last ten or twelve minutes, after which the child was somewhat easier, but always fretful and peevish. The backs of the hands and insteps were swollen and hard. The thumbs were rigidly contracted, and locked across the palms of the hands. The toes were bent down towards the soles of the feet, and both wrists and ankles were rigidly bent by the flexor muscles, and kept permanently so. The little patient could take no food: she was slightly feverish; the bowels torpid; and the stools clayey, slimy, and offensive. The eyes looked very heavy and inanimate. The child extremely irritable and restless both by day and by night.

"For reasons unnecessary to mention, no very active means were employed for some days, during which the child got worse, and was evidently declining fast. Hydrencephalus or eclampsia being now dreaded, leeches were applied to the temples; calomel and antimonial powder were exhibited thrice a day,

and the warm bath was employed in the evening. After the bath and bleeding, the spasms went off for twelve hours entirely, and the child took some food. They returned however, but not so violently as before, and the convulsive respiration was much relieved. The calomel and antimony were continued, as was the warm bath; and the gums were deeply scarified wherever a tooth appeared to be coming. From this time the child gradually recovered, and on the 18th day the spasms had entirely disappeared."*

In no instance has Mr. North seen this disease fatal—and we can say the same in our own practice. It is well known, however, that the late Dr. Clarke, and the present most able practitioner, his brother, together with their elèves, looked, and still look upon this disease, or this train of symptoms, as indicative of hydrocephalus, or rather of that state of brain which leads to hydrocephalic effusion. This treatment is consequently the same as in the last-mentioned disease. While we do not coincide with this school in viewing the disease in so grave a light, we think it prudent, in all these cases, to guard the head, while we freely lance the gums, and act upon the bowels. It must be evident that the spasms above described can only be produced through the instrumentality of the brain and nervous system, by which all power is supplied to the muscles, whether within or without the salutary boundary. But a sympathetic affection of the brain and nervous system, as from dentition, bad secretions in the bowels, &c. is a very different thing from an idiopathic affection of the same organ, constituting an inflammation. The *latter* is dangerous, and cannot continue long without fatal consequences—the former, (in which we include the subject of this article,) is far less dangerous, and may go on, as the cases prove, for some weeks, or even months, and terminate favourably, without any very active measures. Still we would not advise that it should be treated too slightly, but always with the danger of cerebral inflammation or effusion, in our mind—not in the active manner of acute hydrocephalus, but as a preventive of any such supervention. This appears to be the sentiment of Mr. North and of Dr. Kellie.

"The treatment, (says Mr. N.) demanded in the above state, may be very briefly laid down. The gums should be freely lanced, if they appear swollen or inflamed. To keep the bowels open,

* Medico-Chir. Journal, for May, 1817, p. 448-9.

purgatives must be freely given: calomel, in combination with powder of jalap, is perhaps the best remedy. During the convulsive paroxysm, the child should be put into a warm bath. The diet, if the child unfortunately is deprived of its mother's breast, should be very strictly attended to. The digestive powers are evidently weakened, and it is destructive to impose upon the stomach a task which it is not capable of performing, by giving solid food in any form." 41.

We have now put our readers in possession of all we know respecting the symptoms and treatment of this disease. Its pathology is obscure. For our own parts, we think it is produced by the irritation of dentition, or by morbid secretion in the digestive organs." *Medico-Chirurgical Review, April*, 1825.

---

*Fatal Asthma from Affection of the Glottis.** The researches of Magendie and others, teach us that, 1st—the constrictor muscles of the glottis are supplied by filaments from the superior laryngeal nerve—whilst the dilator muscles are supplied by branches from the inferior laryngeal or *recurrent* nerve—2d, that the glottis dilates during inspiration, and is closed almost hermetically, when we make any considerable muscular exertion, as in lifting a heavy weight, for example. Every one must have observed that the breath is firmly retained when we make any great straining exertion with the muscles, especially of the upper extremities. These physiological points are requested by our author to be borne in mind, as they will come into an explanation of the following case.

Case. Michel, 22 years of age, a servant, was received into the hospital Cochin, the 26th of June, 1822, having been discharged only eight days previously from a Maison de Sante, where he had been under treatment for two months, for what was called a putrid fever. The following symptoms were now observable; viz. considerable hoarseness—violent pain in the throat—great sense of suffocation on the least muscular exertion—tongue white—appetite good—pulse frequent and small—face pale and emaciated—chest sonorous, except at the inferior part of the right side—respiration audible in all parts of the thorax—nothing remarkable in the action of the heart. The same symptoms were observable the following day. He expectorated abundantly. At ten o'clock in the evening he was obliged to start

* Dr. M. J. Bouillaud. Journal Complementaire, Juillet, 1824.

from his bed—his inspirations being profound and frequent, accompanied by a peculiar hissing noise. The patient appeared terrified, his eyes starting, and dreading instant suffocation, which indeed appeared inevitable. His pulse was scarce perceptible. These alarming symptoms abated a little in the night. *June* 28. Still great anxiety. Blister to the region of the larynx. In the course of the day, a return of the sense of suffocation, with a horrible state of anguish, during which the patient tore the blister off his throat, and appeared strangling—his head erect, and his neck stretched as much as possible. 29th. Sense of strangulation still more distressing than ever—he was constantly putting his hand to his throat, as if to remove something that was strangling him. He cried for prompt relief from his dreadful anguish, his eyes starting from their sockets, and his countenance the image of despair—the whole of the respiratory muscles in a state of convulsive orgasm. These horrible symptoms continued till four o'clock in the morning of the 30th, when death put an end to his sufferings!

Dissection. An abscess was found situated at the posterior part of the larynx, and also on the sides, the cavity of which was capable of containing a filbert, and its internal surface smooth. The cricoid cartilage was denuded. On closer examination, it was found that the abscess extended round the cricoid cartilage. The crico-arytenoid muscles were of a greenish colour. The arytenoid cartilages were confounded with the muscles above-mentioned, which were in a state of disorganization. No nerves could be traced in them. The arytenoid muscle, however, and its nerves were well preserved. The glottis was not above three or four lines in length, (its rima.) The articulations of the arytenoid cartilages with the cricoid were destroyed. The mucous membrane of the larynx was pale, and the cavity itself filled with reddish and frothy mucus, which was also found in the trachea and bronchia. The mucous membrane of the lungs was, generally speaking, of a deep red colour. The inferior and posterior portion of the right lung was hepatized, but all the rest of the lungs sound. There was no disease in any other part of the thorax. *In the small intestines were found numerous ulcers perfectly cicatrized.*

We shall not enter into the detail of M. Bouillaud's attempt at explaining the phenomena of strangulation in this case. It is thus that the nerves and muscles of dilatation about the glottis were

diseased or destroyed, while those of *constriction* were in a state of integrity. The medical attendants were completely puzzled as to the nature of the case, before the death of the patient; but surely there was the clearest evidence that obstruction to respiration existed at the upper part of the trachea, and, therefore, the operation of tracheotomy was so loudly called for, that we are astonished any surgeon could allow his patient to struggle two or three days in a state of strangulation, without performing the operation!—It was in vain that M. Bouillaud and his associates ascertained by the stethoscope and percussion, that nothing material was wrong about the lungs and heart, when they stood listlessly looking on, and suffered their patient to die the most horrible death that human nature can undergo. The disease of the larynx might, or might not be, afterwards, fatal. That chance should have had no effect in deterring from tracheotomy, which would have given present relief, and a probability of permanent security. Our author cites a case that happened in one of the wards of La Charite, under M. Fouquer, which is completely in point. A young woman had all the symptoms of laryngeal phthisis, and was on the point of suffocation, when M. Roux practised tracheotomy. The operation was attended with some alarming symptoms at the time, but they gradually subsided, and the young woman perfectly recovered. M. Bouillaud observes that, as the dilator muscles, in this case, were in a state of disorganization, it is probable that it would have been necessary to keep an artificial passage open for life.—"One of the most deplorable events that can happen to a man, says he, is, without doubt, the loss of *voice and speech.*" We are very far from agreeing with Dr. Bouillaud on this point. We do not think that the said loss is by any means the most deplorable that can happen to man—or woman either. The patient who was operated on ten years ago, and more, at Portsmouth, and who still breathes through a tube in the trachea, is in perfect health, and the full enjoyment of life—with the exception that he can only listen to, but not join in the conversation around him. It would be the part of a wise man to pursue this plan often, without any silver tube in his throat.

There is a horse at Charenton, which had tracheotomy performed on him, and who breathes through a tube. He draws a chaise; and this fact seems to surprise M. Bouillaud, for the physiological reason mentioned at the beginning of this article.

But our author ought to recollect that, although we stop the breath when we wish to make any violent muscular effort, it is not absolutely necessary that the rima glottidis should be closed during very great muscular exertion. A horse running with all his might, or a man either, keeps the glottis open all the time.

We hope our surgical brethren will attempt, more frequently than they do, to save the lives, or at least, the sufferings of patients threatened with suffocation in laryngeal phthisis, by tracheotomy. *Ibid.*

SURGERY.

Staphyloma cured by Tapping. Dr. Richard Martland has related a case of this kind, of which we shall present some of the particulars. J. Snape, ætat. 38, was afflicted with severe pain in the head, while in his Majesty's service at Gibraltar, in 1812, terminating in quotidian intermittent, of two months duration. In April, 1820, Dr. M. was consulted, and found a cataract of both eyes. In October he cut up the lens of the right eye, and pushed a small portion through the pupil. The operation was repeated twice, and with complete success. On the 14th December, an oculist extracted the cataract from the *left* eye with some difficulty, owing to a partial adhesion of the capsule to the iris, which was unfortunately lacerated, with escape of some of the vitreous humour. Prolapsus of the iris, with violent inflammation took place the first day after the operation, and continued upwards of six weeks, leaving the patient quite blind of this eye, though very active measures had been pursued to reduce the inflammation, and the unreduced portion of the iris was destroyed by lunar caustic. He again applied on the 30th April, complaining of pain darting through the left temple and forehead, with sense of throbbing as well as of pain at the bottom of the orbit of the left eye. The conjunctiva was very vascular, and a large tumour was situated on the ball of the eye, opposite the external canthus, when the eye was directed to the opposite side. The tumour resembled that of the sclerotic coat delineated in Travers's Synopsis, pl. 1. fig. 7, but was rather broader at its base, and of a deeper colour. The iris lay very near the cornea, and had become adherent to it where the incision was made. After some preparatory measures, the eye was tapped by means of a small cataract needle, and some of the vitreous humour escaped. The pain was relieved in

half an hour; but recurred in the night as bad as ever. The inflammation of the eye became more extensive, and the tumour, increased in size. Bleeding, purging—calomel, opium and antimony. In about three weeks another puncture was made, and a considerable quantity of viscid fluid escaped, with much relief. The inflammation now subsided, and the man resumed his trade of weaving. In a few days the tumour again filled, (there were now two of them,) and the head-ache returned. They were again tapped, and again much viscid fluid was evacuated, with instant relief. In a week all the bad symptoms recurred, and the repetition of the paracentesis brougth the usual good effects. We cannot follow the author through his diurnal detail of symptoms and operations; but on the 16th August, we observe that Dr. M. varied the paracentesis. He made a perpendicular incision through the coats of the eye, fully one-third of an inch in length, and about two lines and a half from the temporal edge of the cornea. A great quantity of vitreous humour soon escaped, causing the eye to sink a good deal in the socket, and become very flabby. In spite of this the tumours soon filled again, and it was necessary to tap them six or seven times afterwards. On the 23d February, 1824, no vestige of the tumours remained, and there is a cicatrix where the incision was made. There has been no return of the pain or inflammation. *Ed. Journal, Jan.* 1825.

THERAPEUTICS.

Puerperal Peritonitis. Mr. Davies, in a paper on this subject in the Medical Repository, professes his conviction that the disease is contagious. In the autumn of 1822, he met with twelve cases, while his medical friends in the neighbourhood did not meet with any, "or, at least, very few." He could attribute this circumstance to no other cause than his having been present at the examination, after death, of two cases, some time previous, and of his having imparted the disease to his patients, notwithstanding every precaution.

Of these twelve patients, three died, "although the antiphlogistic plan, in the form of bleeding, purging, leeching, and blistering, &c. was tried to its full extent." Sedatives also were tried, in every form, with the intention of allaying the pain and the irritability of the system attending the disease—but all in vain.

"I have," says he, "in a number of instances, seen bleeding to its very fullest extent tried, followed by purging with calomel, salts, &c. yet the disease, in seven cases out of ten, gained ground, and ultimately killed the patients. I have also had an opportunity, at different times, of examining fourteen cases after death; and the appearances in all, one excepted, were similar. These appearances were, a high degree of inflammation of the peritoneum, especially that portion of it covering the back part of the uterus and front of the rectum; from a pint to two quarts of sero-purulent fluid in the bag of the peritoneum; an adventitious membrane formed on the surface of the peritoneum, glueing the intestines together in one mass; the substance of the uterus, in some cases, almost in a state of gangrene; sometimes the mucous coat of the intestines inflamed; and the arachnoid membrane of the brain inflamed in some cases."*

Mr. Davies goes on to notice a method of treatment which he has found hitherto invariably successful. He had been in the habit, for some years, of treating common peritonitis, after one good bleeding with calomel and opium, "given in pretty large doses, and repeated every two or three hours, till the gums became affected." "I can confidently assert," says he, "that since I have used that plan I have only lost one patient. In this case the remedy had no fair trial." He has tried this plan, in puerperal peritonitis, with bleeding first, and without bleeding, and he has found it to answer both ways. "But when bleeding is premised, the gums become sooner affected by the mercury, and the disease, of course, sooner gives way." He has tried this plan of treatment in nine cases successively of puerperal peritonitis, with the best success. In seven of them bleeding was premised, and these appeared to get well sooner, than the other two.

"After bleeding pretty largely, five or six grains of calomel, combined with a grain of opium, should be given every three or four hours, till the gums become decidedly affected. The calomel then should be reduced in quantity, or substituted by the blue pill, or, in some cases, left off altogether. The object in view is to keep the system slightly under the use of mercury for a few days. As soon as the pain has given way, and the

* Med. Repos. September, 1824, p. 184.

mouth become a little sore, the patient may take a slight tonic, such as infusion of calombo with a little nitre dissolved in it. The bowels should be kept open by clysters till the mercury has affected the system." 186.

AMERICAN INTELLIGENCE.

The following letter recently published in the National Intelligencer, will doubtless be interesting to our readers. We would suggest to the authors of any improvements or discoveries in *Medical* practice, that they would more certainly benefit the profession at large, by publishing their observations in *professional* periodicals, rather than in political or commercial gazettes, where their communications are very frequently overlooked, or are confounded with the ordinary puffs of the day, and passed by with contempt.

Bladensburg, July 10, 1825.

To Joseph Kent, M. D.

Dear Sir—The heat of the weather in the latter part of last month, has already brought about a number of cases of Dysentery, which is unusually early for the appearance of this disease. It is more apt, as you know, to appear in autumn, or the last summer month, and more particularly after dry and sultry weather. If I do not mistake, you are well acquainted with this horrid disorder, having been remarkable for your successful treatment of it, as I recollect often to have heard some years ago, when you were actively engaged in the practice of medicine. Few diseases have led to a greater contrariety of practice than this, in every instance, I presume, founded upon opposite theories as to the remote and proximate causes. It must be viewed, however, as a remarkable fact, that, in those particular instances and seasons of the year that dispose the system to bilious disorders, dysenteries are apt to ensue; and it is quite likely that the remote causes of both complaints are the same. It is certain, however, that in most cases of dysentery, which have fallen under my observation, a considerable degree of *hepatic* derangement has been very evident, and the functions of that important viscus, the liver, morbidly affected. But, whatever idea may be entertained of the remote or the proximate causes of dysentery, one thing is very certain, that the villous

coat of the large intestines is in a state of considerable inflammation, attended with fever, and all the well known distressing train of symptoms that take place from obstinate constriction.

Most practitioners discern two stages of the disease; in the early stage I have generally used the lancet with the best effect, together with free and copious purging, for which purpose I have found nothing to compare with calomel, together with antimonial diaphoretics. Viewing dysentery as presenting an inflamed state of the lower intestines, I have been led to adopt a practice predicated upon that view, which, although novel in a great degree, has been attended in every instance with the most certain success. I use very COLD WATER, (rendered so even by ice,) thrown up the bowels in form of an enema, every half hour. This course, in some instances, I have directed to be continued for twenty-four hours or more without intermission. The effect has more than equalled my expectations. Every distressing symptom is speedily alleviated, the tenesmus subsides, the fever abates, and the dejections assume a better aspect. I would not be understoood as depending upon this remedy alone, but as part of the plan of cure, it has proved of infinite advantage in every instance where I have employed it. This practice appears to me to be sanctioned by the soundest reason; for, if the gut be topically affected with heat and inflammation, what, let me ask, can be more likely to allay that inflammation, than bathing the inflamed coats of the intestine with cold water? We use it to inflamed eyes and other parts, then why not the bowels? Nor has cold water, thus applied to the lower intestines, at any time forbid me the use of all the other remedies commonly employed. I bleed, I give calomel with other purges, I use diaphoretics, the warm bath, or whatever the particular symptoms may at the moment call for, without any interruption to the injections of cold water. And here I will just stop to remark, how often have I witnessed in the course of my professional career, the sufferings from thirst in ardent fevers; when the unhappy patient, parched with heat and draught, would give a kingdom, if he owned it, for a draught of cold water. This, by many too fastidious physicians, is cruelly denied him, for what good reason I know not, and warm insipid teas, at which his stomach revolts, urged in its stead.

In a course of twenty years practice, I can assure you, sir, I

have never, in any instance, seen injury from an indulgence in cold water under such circumstances; on the contrary the good effects of it have often been strikingly apparent, and I always allow it, unless, indeed, some medicine may have been taken, which might forbid drinking it for the time. It is to be hoped, that the day is not distant, when old dogmas, medical, as well as political, will yield to the good sense of mankind, when reason shall stand forth disenthralled from the fetters of old prejudices and habits. But to return. I am very much inclined to think that too much dependence in dysentery is often placed upon opium, and that it is generally resorted to too early in the disease. The temporary ease it procures is delusive, while the inflammatory diathesis is heightened by its stimulating as well as its costive influence. Sydenham seems to have regarded it merely as a tranquilizer: for he expressly says, he would hold, by means of opium, a sort of truce with the disorder until he could resume more potent remedies.*

The idea of using cold water in dysentery first occurred to me in the summer of 1823. I directed its use with ice, in the case of an interesting little boy, the grandson of Mr. Davis, formerly innkeeper in Washington. This child was extremely ill, and I almost despaired of him, but he recovered. I have prescribed it since with undeviating success in many cases, in conjunction with other remedies. Very recently, I have given it a perfect trial in the family of Mrs. Gantt, of your neighbourhood, whose little sons were dangerously ill with this disease, but which has happily yielded to the remedies employed. It has seldom, however, fallen to the lot of a physician to have his prescriptions and directions attended to with so much promptitude and punctuality, directed by so much intelligence and understanding, as the lady just mentioned displayed in her parental attentions to those little boys, who, I am happy to tell you, are now getting well. It would afford me much pleasure to receive your sentiments upon the subject towards which I have drawn your attention. Whatever may tend to lessen the measure of human misery, will not fail to interest you.

I am, with great respect and esteem, your obedient servant,

W. BAKER.

* "Ut scilicet symptomatum fericiam debellaret, atque inducias impetraret, dum cum humore peccante exterminando ipsi res esset."

Statement of Deaths in the City and Liberties of Philadelphia, from the 1st of January, 1824, to the 1st of January, 1825, Specifying their Sexes, Ages, and Diseases.

Deaths in each Month.	Adults.	Children.	Total.
January, . .	272	166	438
February, . .	318	201	519
March, . .	250	230	480
April, . . .	199	143	342
May, . . .	163	126	289
June, . . .	171	181	352
July, . . .	141	173	314
August, . .	160	228	388
September, .	210	181	391
October, . .	192	122	314
November, .	165	126	291
December, .	125	156	281
Totals,	2366	2033	4399

AGES.			
Under	1 Year,		951
From	1 to	2	373
	2 to	5	374
	5 to	10	211
	10 to	15	93
	15 to	20	162
	20 to	30	520
	30 to	40	486
	40 to	50	435
	50 to	60	309
	60 to	70	218
	70 to	80	177
	80 to	90	67
	90 to	100	20
	100 to	110	3
	Total,		4399

The above-mentioned Deaths were caused by the following Diseases and Casualties, viz.

Atrophy, . . .	19	Brought up .	1344
Abscess, . . .	14	Canker, ...	1
Apoplexy, . . .	50	Chorea, ...	1
Asthma, . . .	7	Childbed, . . .	10
Angina Pectoris . .	3	Debility . . .	264
Aneurism, . . .	2	Diarrhœa, . . .	64
Abortion, . . .	1	Dropsy, ...	68
Burns, ...	18	in the Head, .	124
Bronchitis, . . .	12	of the Breast, .	29
Consumption, . . .	576	Drowned, . . .	37
Convulsions, . . .	379	Dysentery, . . .	69
Chilblains, . . .	1	Dyspepsia, . . .	6
Cynanche Maligna, .	1	Drunkenness, . . .	22
Cholera, . . .	164	Decay, ...	15
Catarrh, . . .	51	Disease of Hip Joint, .	4
Cancer, ...	17	of the Heart, .	3
Cholic	7	Death, by Laudanum, .	4
Cachexy, . . .	2	Drinking cold water, .	1
Casualties, . . .	15	Erysipelas, . . .	28
Contusion, . . .	4	Epilepsy, . . .	7
Concussion, . . .	1	Eruptions, . . .	6
Carried up .	1344	Carried over .	2107

Brought over .	2107	Brought up .	3416
Effect of Tartar Emetic, .	1	Locked Jaw, . . .	12
Fever, ...	100	Mania-a-Potu, . .	53
Bilious, . .	80	Measles, . . .	102
Typhus, . .	307	Old Age, . . .	53
Inflammatory, .	6	Palsy, ...	47
Intermittent, .	32	Pleurisy, . . .	10
Remittent, . .	89	Prolapsus Ani, . .	1
Nervous, . .	10	Rheumatism, . . .	11
Hectic, . .	8	Rickets, . . .	2
Puerperal, . .	23	Suffocation, . . .	5
Scarlet, . .	9	Scirrhus, . . .	1
Fracture, . . .	7	Spasms, ...	9
Found Dead, . . .	21	Stricture of the Rectum, .	1
Gout, ...	5	Suicide, ...	2
Gangrene and Mortification,	23	Sore Throat and Quinsy, .	43
Gravel or Stone, . .	1	Scrofula, . . .	15
Hysteritis, . . .	2	Spina Bifida, . . .	5
Hives, ...	84	Stone, ...	2
Hæmorrhage . . .	32	Syphilis, . . .	5
Hooping Cough, . .	42	Small Pox, natural, .	324
Hernia, ...	4	inoculated, .	1
Inhaling Æther, . .	2	Sudden, . . .	46
Injury of Cervical Vertebræ,	1	Still Born, . . .	115
Insanity, ...	23	Thrush, . . .	1
Inflammation of the Lungs,	151	Tumours, . . .	2
Liver, . .	35	Tympanitis, . . .	1
Bowels, .	93	Teething, . . .	11
Breast, . .	17	Ulcers, . . .	7
Brain, . .	66	Varioloid, . . .	5
Bladder, .	2	Varicella, . . .	3
Stomach, .	16	Wounds, . . .	1
Peritonæum, .	10	Worms, . . .	10
Jaundice, . . .	6	Unknown, . . .	77
Inflammation of Kidneys,	1		
		Total, . . .	4399
Carried up .	3416		

Of the above mentioned Deaths, there were:—

Males of 20 years and upwards, . . .	1017	
Ditto under 20 years, ...	1303	
		2320
Females of 20 years and upwards, . . .	1076	
Ditto under 20 years, ...	919	
		1995
Children, principally under one year, whose sex is unknown, ...		84
Total,		4399

Of the foregoing deaths, 590 died in the Alms House, and 703 were people of colour.

Agreeably to the Returns received at the Health Office from *one hundred and seventeen* Practioners of Midwifery, there were born in the City and Liberties of Philadelphia, from the 1st of January, to the 31st of December, 1824, both days inclusive.

Male Children, ...	3062
Female Ditto, ...	2771
Making the total number of Births . . .	5833
The whole number of Deaths, . . .	4399
Difference between the *Births* and *Deaths*, .	1434

By Order of the Board of Health,

JOSEPH PRYOR, *Clerk.*

Health Office, January 1, 1825.

Statement of deaths in the city and county of New York, from the first of January, 1824, to the first of January, 1825. Specifying their Sexes, Ages and Diseases.

Deaths in each month.	Adults.	Children.	Total.
January, . .	176	169	345
February, .	173	190	363
March . .	192	193	385
April, . . .	213	198	411
May, . . .	191	162	353
June, . . .	155	163	318
July, . . .	154	203	357
August, . .	168	278	446
September, .	158	194	352
October, . .	204	181	385
November, .	194	146	340
December, .	153	133	286
Totals,	2131	2210	4341

AGES.	
Under 1 Year,	1072
From 1 to 2	397
2 to 5	389
5 to 10	164
10 to 20	190
20 to 30	559
30 to 40	544
40 to 50	425
50 to 60	258
60 to 70	159
70 to 80	115
80 to 90	56
90 to 100	11
100 to 110	2
Total,	4341

The above mentioned Deaths were caused by the following Diseases and Casualties, viz.

Abscess, . . .	17	Brought up . .	19
Aneurism, . . .	2	Apoplexy, . . .	52
Carried up . .	19	Carried over . .	71

Brought over		71	
Asphyxia,		1	
Asthma		5	
Burned or Scalded		31	
Carbuncle,		1	
Cancer,		9	
Casualty		33	
Catarrh,		4	
Childbed,		44	
Cholera Morbus,		22	
Cholic,		10	
Consumption,		736	
Convulsions,		231	
Contusion,		1	
Cramp in the Stomach,		8	
Diabetes,		2	
Diarrhœa,		55	
Drinking cold water,		3	
Dropsy,		115	
in the Chest,		44	
in the Head,		218	
Drowned,		53	
Dysentery,		120	
Dyspepsia,		5	
Epilepsy,		10	
Erysipelas,		8	
Fever,		32	
Bilious,		11	
Bilious Remittant,		6	
Hectic		2	
Inflammatory,		8	
Intermittent,		15	
Puerperal,		6	
Putrid,		3	
Remittent,		25	
Scarlet,		3	
Typhus,		79	
Flux, Infantile,		102	
Fracture,		2	
Gout,		2	
Gravel,		4	
Hæmorrhage,		14	
Hæmoptysis,		8	
Hives or Croup,		139	
Hysteria,		2	
Carried up		2303	

Brought up		2303	
Jaundice,		12	
Infanticide,		1	
Inflammation of the Bladder,		3	
	Bowels,	108	
	Brain,	46	
	Chest,	140	
	Liver,	37	
	Stomach,	15	
Influenza,		2	
Insanity,		7	
Intemperance,		70	
Killed or murdered,		1	
Locked Jaw		11	
Lumbar Abscess,		1	
Marasmus,		24	
Measles,		100	
Mortification,		13	
Nervous Disease,		5	
Old age,		151	
Palsy,		40	
Peripneumony,		31	
Pleurisy,		34	
Pneumonia Typhoides,		5	
Quinsy,		15	
Rheumatism,		5	
Rickets,		1	
Rupture,		6	
St. Anthony's Fire,		6	
Scirrhus of the Liver		1	
Scrofula or King's Evil,		15	
Small Pox,		394	
Sore Throat,		21	
Spasms,		6	
Spina Bifida,		1	
Sprue,		24	
Still Born,		250	
Sudden Death,		8	
Suicide,		19	
Syphilis,		12	
Tabes Mesenterica,		120	
Teething,		46	
Tumour,		1	
Vomiting Blood,		1	
Carried over		4112	

Brought over	4112	Brought up	4212
Ulcer,	11	Whooping Cough,	116
Unknown,	86	Worms,	13
White Swelling,	3		
Carried up	4212	Total,	4341

Of the above mentioned Deaths, there were:—

Men,	1244	
Boys,	1204	
Total Males,		2448
Women,	887	
Girls,	1006	
Total Females,		1893
Total Number,		4341

REMARKS.

The City Inspector respectfully reports to the Board, a statement of the deaths in the city and county of New York, for the year one thousand eight hundred and twenty-four, amounting to *four thousand three hundred and forty-one.* This number considerably exceeds that of the preceding, being *eight hundred and ninety-seven* more than what then took place.

The deaths by Consumption, were *seven hundred and thirty-six.* The males exceeded the females *sixty-six* in number.

The number of coloured persons that died of this fatal disease, amounted to *one hundred and seven.* The entire deaths of this class of every complaint, were *seven hundred and eighteen.*

It is to be regretted, that the *Small Pox*, which commenced its frightful ravages in November, one thousand eight hundred and twenty-three, has not yet been arrested in its course. During the last year, *three hundred and ninety-four* died of this complaint, of which *one hundred and thirteen were coloured persons.* This large proportion probably arose from their greater inattention to *Vaccination* than the whites manifest; yet it is well known that a very great negligence in this important practice, prevails amongst the latter, notwithstanding the many opportunities afforded to all in our city.

Respectfully submitted,

GEORGE CUMING, *City Inspector.*

City-Hall, New York, January 17, 1825.

GENERAL ABSTRACT

OF THE

BILL OF MORTALITY FOR THE CITY OF BOSTON,

FROM THE 31ST OF DECEMBER, 1823, TO JANUARY 1, 1825, AGREEABLY TO THE RECORDS KEPT AT THE HEALTH OFFICE.

1824.	Under 1 year		Between 1 & 2		Between 2 & 5		Between 5 & 10		Between 10 & 20		Between 20 & 30		Between 30 & 40		Between 40 & 50		Between 50 & 60		Between 60 & 70		Between 70 & 80		Between 80 & 90		Between 90 & 100		Stillborn	Unkno'n		TOTAL
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		M.	F.	
January, . .	6	7	1	4	2	2	1	2	2	2	2	8	7	3	5	3	6	2	1	5	1	2	1	1	0	0	9	4	5	94
February, .	3	3	1	4	2	3	1	0	3	1	2	2	12	4	8	5	5	3	0	1	0	1	0	1	0	0	7	5	3	81
March, . .	9	8	4	3	4	2	1	3	1	2	2	4	12	3	5	5	6	1	1	4	2	2	0	2	1	0	7	10	4	109
April, . .	7	4	1	3	1	2	2	2	1	3	2	8	7	5	6	2	6	2	2	2	2	1	1	0	0	0	6	5	5	96
May, . .	3	4	2	1	1	6	0	2	3	3	1	3	5	5	9	5	1	2	3	1	1	4	2	1	0	0	11	3	2	82
June, . .	2	5	2	0	4	3	0	1	2	3	3	2	6	5	3	2	4	3	0	2	2	1	1	0	0	1	8	8	4	78
July, . .	4	6	3	4	1	0	2	3	3	3	10	2	3	11	6	2	3	4	1	5	0	1	0	0	0	1	7	5	4	91
August, . .	11	12	6	7	3	4	3	2	3	0	5	6	8	3	3	5	8	2	4	2	2	3	0	3	0	0	7	8	5	125
September, .	19	13	12	19	3	2	1	3	2	4	7	5	10	7	10	3	2	1	1	3	1	3	0	2	0	0	8	6	7	154
October, . .	12	11	10	9	5	5	1	1	0	5	6	9	8	7	1	5	5	1	1	2	1	1	0	2	0	1	11	9	6	135
November, .	16	13	8	3	5	5	3	1	3	3	7	2	4	1	3	7	0	8	3	3	2	4	1	1	0	0	3	5	4	118
December, .	13	8	4	8	11	4	6	1	1	1	4	10	4	5	5	4	3	7	4	3	3	2	1	0	0	1	5	10	6	134
	105	94	54	65	42	40	23	16	24	31	62	67	77	61	64	46	48	36	21	33	17	25	7	13	1	03	89	78	55	1297

The number of Deaths above, include those in the Alms-House, and the City Poor, and were occasioned as follows:—

Abscess,	9	Brought up	868
Accidental,	9	Pleurisy,	7
Apoplexy,	9	Typhus,	46
Asthma,	2	Bilious,	14
Atrophy,	9	Puerperal,	13
Bilious Colic,	2	Putrid,	1
Bleeding at the lungs,	2	Spotted,	1
Burns,	6	Fits,	27
Cancerous Humour,	3	Fungus,	2
Canker,	18	Gout,	2
Canker in the Bowels,	2	Gravel,	1
Carbuncle,	1	Hepatico Gasteritis,	1
Chicken Pox,	1	Hooping Cough,	13
Cholera Morbus,	7	Hydrothorax,	14
Cholera Infantum,	11	Inflammation,	3
Complaint of the Heart,	4	of the Bowels,	13
Complication of disorders,	2	of the Lungs,	2
Complaint of the Bowels,	2	of the Stomach,	3
Consumption,	242	of the Heart,	7
Croup,	30	Insanity,	2
Debility,	11	Marasmus,	4
Decay of Nature	5	Measles,	2
Decline,	2	Mortification,	12
Delirium Tremens	4	Old Age,	33
Diarrhœa,	24	Ossification,	1
Diseases unknown,	195	Palsy,	12
Infantile.	32	Phthisis Pulmonalis,	2
Disorder of the Mesenteric Glands,	4	Pneumonia,	4
Disorder of the Kidneys,	1	Quinsy,	11
Drinking cold water,	2	Rheumatism,	9
Dropsy,	12	Rupture,	2
of the Head,	33	Salt Rheum,	1
of the Chest,	14	Scirrhus,	6
Drowned,	18	Scrofula	3
Dysentery,	45	Spasms,	9
Enlarged Spine,	1	Stillborn,	91
Epilepsy,	2	Strangulated Hernia,	1
Fever,	5	Strangury,	1
Lung,	71	Sudden,	7
Nervous,	4	Suicide,	5
Inflammatory,	2	Suffocation,	1
Brain,	10	Syphilis,	3
		Teething,	10
Carried up	868	Carried over	1270

Brought over	1270	Brought up	1276
Tetanus,	2	Wounds,	1
White Swelling,	1	Intemperance,	20
Worms,	3		
Carried up	1276	Total	1297

N. B. There were also three deaths of Yellow Fever, and two of Small-pox, in the Hospital, Rainsford Island.

By order of the Mayor and Aldermen,

SAMUEL H. HEWES,

Superintendent of Burial Grounds.

Statement of Deaths in the City of Baltimore, from the 1st of January, 1824, to the 1st of January, 1825. Specifying their Sexes, Ages, and Diseases.

Deaths in each month.	Males.	Females.	Total.
January,	55	40	95
February,	65	69	134
March,	66	55	121
April,	62	45	107
May,	41	47	88
June,	59	51	110
July,	75	80	155
August,	78	95	173
September,	74	56	130
October,	58	67	125
November,	77	51	128
December,	58	44	102
Totals,	768	700	1468

AGES.	
Under 1 Year,	412
From 1 to 2	78
2 to 5	106
5 to 10	57
10 to 21	112
21 to 30	139
30 to 40	164
40 to 50	152
50 to 60	79
60 to 70	74
70 to 80	56
80 to 90	29
90 to 100	7
100 to 110	3
Total,	1468

The above mentioned Deaths were caused by the following Diseases and Casualties, viz:

Apoplexy,	17	Brought up	298
Asthma,	3	Casualty,	10
Amenorrhœa	2	Cholic Cramp,	8
Ague and Fever,	2	Bilious,	3
Burn,	7	Childbed,	16
Consumption,	188	Cholera Morbus	5
Convulsions,	46	Infantum,	90
Croup,	33	Cancer in the throat,	2
Carried up	298	Carried over	432

Brought over .	432	Brought up .	1097
Divine Providence, .	1	Locked Jaw, . . .	4
Dysentery, . . .	13	Lightning, . . .	1
Drowned, . . .	27	Murdered, . . .	2
Dropsy, . . .	25	Mortification, . .	10
——— in the Chest, .	1	Mania, . . .	4
Decay, . . .	57	Measles, . . .	14
Diarrhœa, . . .	1	Marasmus, . . .	1
Drinking Oil of Vitriol,	1	Obstruction of the Bowels,	1
Erysipelas . . .	3	Old Age, . . .	72
Fever, Typhus, . .	111	Pleurisy, . . .	32
Bilious, . .	62	Palsy, ...	9
Catarrh, . .	19	Poison, . . .	3
Puerperal, . .	2	Phthisic, . . .	1
Inflammatory, .	1	Quinsy, . . .	3
Nervous, . .	2	Rheumatism, . . .	4
Intermittent, .	5	Scrofula, . . .	2
Remittent, . .	2	Still Born, . . .	102
Typhoides Pneumonia	7	Sudden, . . .	20
Fistula, . . .	1	Scald, ...	4
Gravel, . . .	4	Small Pox, . . .	*2
Hæmorrhage, . .	4	Sore Throat, Inflammatory,	4
Hydrocephalus, . .	21	Suicide, . . .	5
Infantile Unknown, .	221	Syphilis, . . .	4
Intemperance, . .	25	Spleen, . . .	2
Inflammation of the Breast,	6	Thrush, . . .	4
Bowels, .	8	Teething, . . .	4
Brain, . .	13	Violence, . . .	1
Heart, .	2	Unknown Adults, . .	32
Lungs, .	2	Worms, . . .	10
Jaundice, . . .	4	Whooping Cough, .	14
Liver Complaint, .	14		
Carried up .	1097	Total, . .	1468

Of the deaths above enumerated, 416 were People of Colour —of whom 368 were *Free*, and 48 were *Slaves*.

N. B. The coloured population of this city in 1820, according to the United States' census was, Free 4357, Slaves 10,294.

By order of the Board of Health,

EDWARD P. ROBERTS, *Sec'ry.*

BALTIMORE, January 1, 1825.

* Alexander Warner, a coloured man, died at the Hospital in March. James Lorens, a white lad, an apprentice to Mr. Spence, died at the Hospital in September—both cases removed on the first indication of the disease.

Statement of Deaths in the City of Charleston, (South Carolina,) from the 1st of January, 1824, to the 1st of January, 1825. Specifying their Sexes, Ages and Diseases.

Deaths in each month.	Males.	Females.	Total.
January,	38	30	68
February,	40	31	71
March,	34	31	65
April,	38	35	73
May,	47	31	78
June,	72	41	113
July,	52	41	93
August,	80	45	125
September,	84	46	130
October,	80	27	107
November,	51	24	75
December,	40	21	61
Totals,	656	403	1059

AGES.	
Under 3 Years,	265
From 3 to 10	96
10 to 20	66
20 to 30	179
30 to 40	147
40 to 50	116
50 to 60	54
60 to 70	66
70 to 80	37
80 to 90	20
90 to 100	6
100 to 110	5
110 to 120	2
Total,	1059

The above mentioned Deaths were caused by the following Diseases and Casualties, viz:

Abscess,	4
Accident,	11
Apoplexy,	25
Asphyxia,	1
Asthma,	3
Cachexy,	1
Cancer,	5
Carbuncle,	1
Catarrh,	10
Childbed,	10
Cholic,	4
Constipation,	1
Consumption,	101
Convulsions,	30
Cramp,	2
Croup,	14
Debility,	28
Diarrhœa,	54
Dropsy,	70
Drowned,	11
Dysentery,	13
Fever and Ague,	1
Bilious,	29
Carried up	429

Brought up	429
Fever, Catarrhal,	10
Country,	9
Nervous,	16
Worm,	31
Yellow,	236
Fistula,	1
Gravel,	1
Hæmorrhage,	2
Imperfect Rectum,	1
Insanity,	3
Inflammation of the Brain,	2
Bladder,	1
Lungs,	12
Intemperance,	26
Jaundice,	7
Leprosy,	1
Liver Complaint,	13
Locked Jaw,	16
Mortification,	1
Old Age,	62
Palsy,	10
Whooping Cough,	69
Carried over	959

Brought over	959	Brought up	995
Pleurisy,	5	Stroke of the Sun,	9
Polypus,	1	Sudden Death	6
Quinsy,	1	Suicide,	4
Rheumatism,	7	Swine Pock,	1
Rupture,	1	Syphilis,	1
Scrofula,	5	Teething	35
Scurvy,	1	Thrush,	4
Small Pox,	1	Ulcer,	1
Sore Throat,	7	Violence,	2
Spasms,	6	Unknown,	1
Strangury,	1		
		Total,	1059
Carried up	995		

Of the above mentioned Deaths, there were:—

White Males,	434	
White Females,	198	
Total Whites,		632
Black Males,	222	
Black Females,	205	
Total Blacks,		427
Total Deaths,		1059

Of the Whites, there were—

Natives of this State,	250
Different parts of the United States,	130
Foreigners,	252
Total,	632

By order of the Board of Health,
JAMES A. MILLER, *Clerk.*

Dr. HORNER has requested us to state that the patient on whom the lateral operation was performed, alluded to in his note on Mr. Lukens's instrument, (page 375 of the present number,) died since the proof sheets passed through his hands.

UNIVERSITY OF PENNSYLVANIA.

The Committee of the Trustees appointed to distribute the tickets of *gratuitous* admission to the course of Medical Lectures, which will be given in November next, agreeably to the foundation established by the Medical Faculty, *give notice*, that applications in writing, under seal, addressed for the above named Committee, *to the care of the Secretary of the University of Pennsylvania*, may be made at any time before the first Monday of September next.

It is required that each application be accompanied by a respectable testimonial of the good character of the applicant, and of his being in such restricted circumstances, as entitle him to the benefit of this foundation. It must also appear that he has attained the age of eighteen years, is possessed of sufficient literary acquirements, and of studious habits.

On the first Monday of September next, the Committee will open and decide on the applications, and immediately give notice to the successful applicants, and return to the others their applications and testimonials, their names not to be disclosed by the Committee.

BENJAMIN CHEW,
WILLIAM MEREDITH,
JAMES GIBSON,
Committee of the Trustees.

PENNSYLVANIA INFIRMARY FOR DISEASES OF THE EYE AND EAR.

Dr. Hays, one of the Surgeons of this Institution, proposes to deliver the ensuing winter, a Course of Lectures on the Diseases of the Eye.

INDEX TO VOLUME X.

Vol. I.—New Series.

A.

Aneurism, Barton's case of, 127.
——— of the aorta, 88.
Anatomical structure of trachea and bronchia, 185.
Anatomy, Godman's contributions to, 78.
American Intelligence, 217, 410.
Absorbent system, Meigs on the, 286.
Animal heat, Bond on, 307.
Andral, case of inflammation of the thoracic duct, 396.
——— cases of icterus, 200 to 208.
Asthma, fatal, from affection of the glottis, 404.
Asylum, Waln's account of Friends', 225.

B.

Butt's case of amputated ulna, 115.
Bronchocele, Denny's paper on, 47. Richardson's note on, 52.
Brain, comparative anatomy of, 188.
—— hypertrophia of, Scoutteten's case, 394.
Biliary ducts, obliteration of, 199.
Bell on periodicity, 328.
Bond on animal heat, 307.

C.

Catarrh, Dewees on the epidemic, 66.
Cholera infantum, Condie on the, 13.
Contagion, Yeats' paper on, 54.
Cooke on epilepsy, review of, 133.
Civiales lithontriptor, notice of, 218.
College, Columbian, advertisement of, 223.
Condie on digestion, 348.
——— on cholera infantum, 13.
Carcinomatous os uteri, Sharpless' case of, 386.

D.

Dysentery, Lawrance's cases of, 264 to 267.
Digestion, Condie's essay on, 348.
Diseases of children, Dewees's work on, announced, 217.
Dyspnœa, Andral's fatal cases of, 197.
Dissection of yellow fever subjects, Lawrance's, 2, 252.
Denny on Bronchocele, 47.
Drake, Daniel, M. D. appointment announced, 218.
Dewees on epidemic catarrh, 66.
Dysentery, Baker's letter on, 410.

E.

Epidemic of the valley of Virginia, Thomson's paper on, 96.
Epidemics, Smith's philosophy of, reviewed, 162.
Epidemic catarrh, Dewees on the, 66.

F.

Francini on absorption, 190.

G.

Gout, anomalous, Bayle on the, 211.
Griffith on medical jurisprudence, 36.
Godman's contributions to physiological and pathological anatomy, 78.
——— note on the muscular system, 270.
Gland, prostate, 87.

H.

Hepatic phthisis, 208.
Havana, Osgood on winds, sickness, &c. of, 279.
Horner's account of Lukens' lithokonion, 373.
Hernia, Morris's case of, 390.

I.

Icterus, cases of, 200 to 208.
Insane, Waln's account of Friends' Asylum for the, 225.

J.

Jackson's case of effusion into the chest, 119.

K.

Kent, letter to Joseph, M. D. by W. Baker, 410.

L.

Lawrance, Jason V. O'B. M. D. Posthumous papers, 1, 252.
Lizar's attempt to extirpate the ovarium, 192.
Labour, case of, with carcinomatous os uteri, 386.
Lithokonion, Horner's account of Lukens', 373.

M.

Meigs on the absorbent system, 286.
Medical jurisprudence, Griffith on, 36.
Muscular system, note on the actions of the, 270.
Mortality, Bills of, for the last year, 413.

O.
Osgood on winds, sickness, &c. of Havana, 279.
P.
Prostate gland, 87.
Peritoneum, pathological anatomy of, 195.
Practice of medicine, Jackson's American announced, 217.
Pennsylvania, commencement of the University of, 220.
Periodicity, Bell on, 328.
Posthumous papers, J. V. O'B. Lawrance's, 1, 252.
Pathology, 195, 393.
Physiology, 191.
R.
Remarks on the absorbent system, 286.
Robert B. Butt, M. D. his case of amputated ulna, 115.
S.
Scirrhus tumour of the uterus, Dr. Skinner's case of, 383.
Smith's philosophy of epidemics, review of, 162.
Skinner, Dr. Joseph C. case of tumour of the uterus, 383.
Spasms, peculiar, in children, 398.
T.
Tidyman, Philip, M. D. case of child with two uvulæ, communicated by, 380.
Therapeutics, 408.
Thomson on the epidemic of the valley of Virginia, 96.
U.
Ulna, successfully amputated, 115.
Uterus, tumor of, 383.
——— large tumor of, &c. 82.
Uteri os, case of carcinomatous, 386.
V.
Villermé on inflammation, 393.
W.
Waln, Robert, jr. account of Asylum, &c. 225.